Veterinary Medicine

VOL. XXI NOVEMBER, 1926 No. 11

Veterinary Practice and Veterinarians Twenty-Five Years Since

STICKIN' TO YOUR BUSH PAYS

DR. N. S. MAYO'S report at the recent meeting of the A. V. M. A. at Lexington on the "History of the Veterinary Profession in America" aroused memories in a number of us, who prefer to be called "old timers" rather than "back numbers," that took our minds completely off the program of the meeting for the remainder of the session for that day. We adjourned from the meeting hall to comfortable seats on the mezzanine floor and proceeded to hold a session on "reminiscences."

Our numbers increased by accretion, and so far as I observed there was no defection till meal time. The editor of Veterinary Medicine happened along and insisted that if these reminiscences possessed such an absorbing interest for us they would interest others and perhaps contain some valuable informative matter for the newer members of the profession. Though not entirely convinced of this, several agreed to put our experiences, impressions and conclusions on paper. It was agreed that our identity be withheld to offer that much less excuse for failing to mention our own frailties.

I am instructed to limit my tale to practice twenty-five years ago, which takes me back to the summer of 1901. I was practicing then in the same little city in which I am practicing now, having located there a total stranger upon graduation five years previously. There were two graduates, that is, one besides myself, in our town then, and there are two now. While I have remained there all this time, I have had four different confreres. There were four nongraduates, giving a greater or less attention to practice in my town twenty-five years ago. There are none now, if we except our county agent who has a penchant for "doctoring" poultry. Possibly this infringement of the county agent on the prerogatives of the veterinary profession, if it may be called such, is our own fault as somehow neither I nor my brother practitioner could ever bring ourselves to cultivate or in fact do other than discourage poultry practice, which is a new and unimportant part of the work here at best.

Although my practice has survived that of all the nongraduates, I do not take to my-

Nelson S. Mayo, head of the Veterinary Department, Abbott Laboratories, Chicago. Formerly State Veterinarian of Kansas and of Vermont; head of the Veterinary Department of the Kansas State Agricultural College, the Animal Husbandry Department of the Virginia Polytechnic Institute, and head of the Bureau of Animal Iudustry of the Republic of Cuba. Secretary, A. V. M. A. 1913-15, 1918-22. Doctor Mayo is a Lieutenant-Colonel, V. C., in the Officers' Reserve of the U. S. Army.

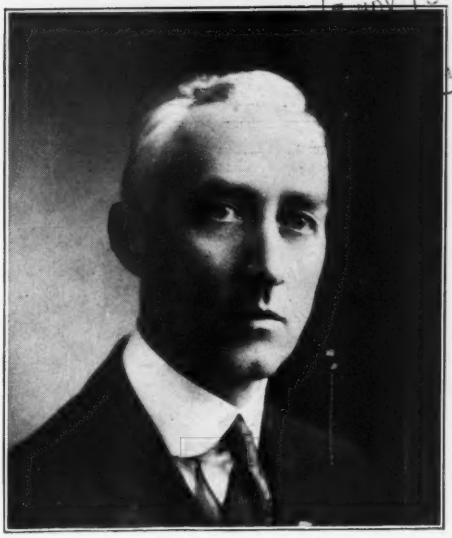
PROMINENT VETERINARIANS IN COMMERCIAL LINES

NOV 15 1926

self credit for having "put them out of business." Two of them lived on farms and were of mature years, of considerable family, even when I came here. As their boys grew up and went away, the increasing demands of their farms upon their time and their advancing years brought about their voluntary and gradual retirement from practice. Another of the nongraduates, the only disreputable one of the lot, left for supposedly greener pastures when the rest of the veterinarians here equipped themselves with automobiles, about fifteen years ago. The high cost of liquor kept him too poor to buy a car then. Buying a car in those days meant a cash outlay of the whole cost of the car—there were no cars sold on the installment plan.

The practice of the remaining nongraduate was brought to a close by Mr. Newmo Coccus and family following exposure on an obstetric case one cold winter night. This is a route by the way which I came within an ace of traveling myself the same winter. In my opinion there has not been an adequate reason for the three changes that have come about among the graduate practitioners here. They are accounted for by the slim collections of 1907 and 1922 and by the unsettling effect of the World War in 1917. These changes perhaps more than anything else have enabled me to acquire and to hold the best clientele and the most remunerative practice here, and enabled me to lay by something for the non-productive years that we all must contemplate at the end.

There has always been sufficient practice here for the number of practitioners engaged in doing it. There is more practice done here now than there was twenty-five years ago, yet the two of us are no busier now than were the six of us then. This is accounted for almost equally by the use of automobiles in making calls and by the construction of hard roads over which to make them. I presume the income of the two of us now here is approximately the same as that of the six of us was twenty-five years ago. Expenses incidental to our practices have not increased in the same ratio. Our living expenses on the contrary have increased to a greater extent, so the net is about the same. We have, though, many luxuries we couldn't afford when I began practice here, or our savings would mount up much faster now.



R. R. Dykstra, Dean, Division of Veterinary Medicine, Kansas State Agricultural College, Manhattan.

If I could turn time's clock back a third of a century, I think I would again plan to attend the old veterinary school in Toronto. I have worked fewer hours than the farmers

C. H. Stange, Dean, Division of Veterinary Science, Iowa State College, Ames. President, A. V. M. A. 1923-24. Like Dr. Dykstra, Dr. Stange entered the profession less than 25 years ago.

in this community and travelled vastly more. My family has lived better than most of the farm families and has had far better op-

R. A. Archibald (deceased). A leader in the veterinary profession of the Pacific Coast 25 years ago. President, A. V. M. A. 1915-16.

portunities for schooling. We have lived better and accumulated a greater competence than the unskilled laborers and the holders of the white-collar jobs in this city. My income has been steadier and on the whole greater than that of the few skilled tradesmen. Many of the business men in this community have made more money than I have, and on the other hand not a few of them have failed in business. All have had their ups and downs and have known financial worries, to which I have been a stranger. There have been too many changes in the lawyers and doctors in this little community to allow me to believe that their lot has been as satisfactory as my own.

I know every one and am known to all of consequence in this locality, and I believe I have the respect and esteem of the vast majority. My services have conserved a great deal of wealth for this community which is essentially an agricultural district. Boastful as it may seem, I cannot think of any other man who has been more valuable to it in a material way; but admittedly we have produced no outstanding citizens who have remained here; we are just "Main Streeters."

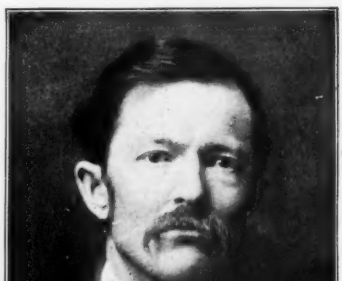
In another five years, even our younger children will be no financial burden to wife and me, and we could easily pull up and go to California and sit beneath our own vine and fig tree with little to do. But we have no thought of living elsewhere than here where our friends are. Never have I seen happiness result from breaking off all old associations at the age of sixty as we shall be then.

Many times in the past I have wanted to get out of veterinary practice and have yearned for newer fields, but a conservatism inherited from my Scotch ancestors has forestalled radical action, and now I am glad of it. I have almost arrived at the point where I can say of the veterinary profession in the words of Dr. John Adams, "I love the veterinary profession. It completely fills my being. It satisfies my noblest longings—all my soul's desires."

A '96.

LOSS OF PRACTICE DUE TO POOR PRACTICES

Twenty-five years ago takes me back to my first year in practice. The experiences of that year are clearer in memory's pages than any season since. There have been



C. A. Cary, Dean, College of Veterinary Medicine, Alabama Polytechnic Institute, Auburn. Dr. Cary has been State Veterinarian of Alabama nearly forty years, and yet among the leaders in the profession, none is more active than he. Almost as conspicuous as his prominence among official veterinarians has been his fame and skill as a surgeon. President, A. V. M. A. 1919-20.

changes in veterinary practice since then to be sure, but in some phases no great progress has been made.

Take surgery, now as always the most spectacular part of veterinary practice, a reputation and a practice builder and remunerative. There has been retrogression in equine surgery in a quarter century—there are no standards for the comparison of surgery in small animals.

The average veterinarian has devoted so much time in the last decade to acquiring skill with the hypodermic syringe that he has nowhere near the cunning of his predecessor with the scalpel, the hemostat and the casting harness. It is true when I began practice operations invading the peritoneal cavity of the horse were taboo, if we except from this class cryptorchid operations, but that was chiefly because the antiseptics then used were less effective than those we now have at our command.

It is also true that some of our very finest operations nowadays were unknown then. For example, Bemis' nerve blocking for dental and facial operations, Williams' roaring operations and the radical operation for poll evil, but how many perform them? Precious few that I know.

Twenty-five years ago a veterinarian was called a veterinary surgeon, seldom anything else (complimentary), and he had in a measure to live up to the name or quit practice for want of clients. I'll take my hat off to Bemis and Frost and Dykstra and acknowl-

The horse is responsible for there being a veterinary profession in America

edge that in my early days we didn't have their peers in veterinary surgery, but Pshaw! they are specialists. Twenty-five years ago every veterinarian performed major operations daily or at least weekly if he was any good, and perhaps anyhow, and we had a whole lot of knights of the knife that could practice as well—made their livings that way.

Our conventions then and for a dozen years thereafter centered around our surgical clinics. We didn't have many papers on the cultural characteristics of ultramicroscopic organisms, but we did have demonstrations that would give you an idea that you could take home and make some money out of. The meetings were a financial as well as a professional gain to those attending.

Nowadays a clinic is like a circus made up of rings, different performances to interest different people—a lapdog here—bossy there—some parasites in another corner—a coop of biddies, and a porker or two, and all put together they don't hold half the crowd nor one per cent of the interest that the old clinics used to hold. Did you ever see the finish of more than one horse race at a time? No, and you never will. It isn't necessary—if the entertainment is right it will hold the crowd without accessories.

O yes, veterinary practice is all right, more agreeable than it used to be, but McKillip and Hughes and Klotz and Williams and

A VERY CRITICAL PULSE INDEED
DOCTOR, I HOPE THE POOR MULE WON'T DIE
DOCTOR, DO YOU THINK I SHOULD PUT SOME BOILED ONIONS ON HIS CHEST?
NO-HELL'S BOIL IT'S A HEART STIMULANT—WHAT HE NEEDS
THE LAST WORDS MY DEAR HUSBAND SAID WAS, "MOTHER TAKE GOOD CARE OF MY MULE WHEN I'M GONE"
THOSE WERE VERY SYMPATHETIC WORDS INDEED
OH! DOCTOR YOU SAVED MY MULE
E.A. SCHMOKER

Some present day veterinarians' idea of veterinary practice 25 years ago

County agents are not interfering with these cases.

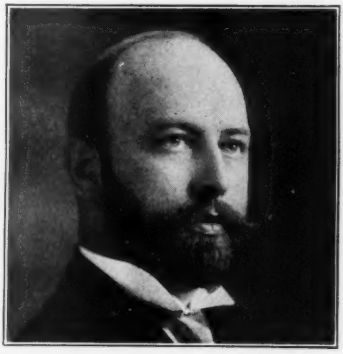
Adams and Merillat and Craig and Anderson and Moore, who used to go up and down the land presiding at veterinary clinics, set an example we will do well to remember. There were no county agents in those days, and they wouldn't have infringed on our practice if there had been, for our work didn't comprise many of Adams' "nice clane jobs." There isn't one of those dandies that will take a fistula operation away from you, a colt from a Percheron mare, or a three-day old retained placenta from the family cow. If we make veterinary practice as simple as following the directions on a package of hypodermic tablets we should expect to broaden its appeal.

The art of nursing as an adjunct to veterinary practice is being neglected if not lost altogether, because to get it done right it requires manual labor for the veterinarian. The practitioner used to take off his coat and say: "This horse has got to have a comfortable bed. Get me a pitchfork and bring me two or three big armfuls of straw and I'll fix him up," or "Bring me some clean water in a clean pail and a hammer and saw and nails and some pieces of board and I'll fix it so he can have a drink whenever he wants it. And get me a pail of hot water and a scrub-brush and some soap—I want to clean up this feed box and get rid of the smell and perhaps old Dexter will eat a little." Now the young practitioner as he reaches his car, turns and tells the owner of the patient in crisp business-like tones, "Bed him well and keep clean feed and water before him. If he gets worse phone me during office hours tomorrow." And it is not done. As the leader of the mob said: "If you want a thing done right; do it yourself."

B '01.

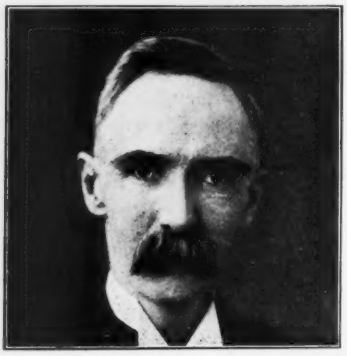
A NEW PRACTICE CONFRONTS PRESENT DAY VETERINARIANS

Veterinary practice and veterinarians have changed in many ways since I began it in one of the border states immediately upon graduation from one of the midwestern veterinary colleges, a school that took John Adams' advice before he gave it and closed its doors long since.



John R. Mohler. Formerly Chief of the Pathological Division, B. A. I.; later Assistant, and now Chief of the U. S. Bureau of Animal Industry. President, A. V. M. A. 1912-13. Editor, Journal of the A. V. M. A. for several years. The profession in America has not produced a more commanding figure than Doctor Mohler.

Although I haven't my old account books to refer to, I think a fair approximation would accord 90 per cent of my practice in



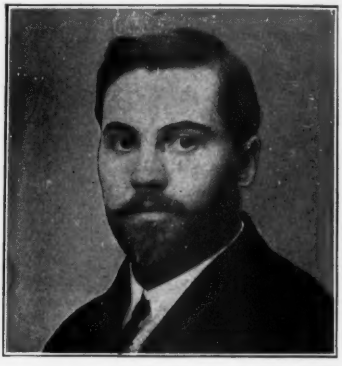
A. H. Baker, prominent in the profession in Chicago and the nation for twice 25 years. Still in active practice. A regular attendant at all meetings of the A. V. M. A. wherever held. Has travelled more miles at his own expense to attend A. V. M. A. meetings than anyone else.

those days to the horse and mule, 8 per cent to dairy animals and the remainder to dogs, cats, swine and cage birds.

The two per cent, if it equalled that, was made up of occasional spaying of hunting or house dogs, rare castration of tomcats, infrequent setting of legs or wings of canaries and parrots, the castration of old boars or boars with scrotal hernia or removal of

David S. White, Dean, College of Veterinary Medicine, Ohio State University, Columbus. President, A. V. M. A. 1920-21. For more than 25 years a leader in the profession. Dr. White is a Colonel in the Veterinary Officers' Reserve, U. S. A.

botriomycotic tumors following castration of pigs by the owners, and quite infrequently obstetric cases in the sow. I remember but one call to see sheep (several cases of tetanus following castration) and only one to see a goat (a severed trachea from a mix-up with a bulldog) in my first five years of practice, and yet I discouraged no clients who sought my services for any sort of veterinary work. The owners of animals just didn't call veterinarians to any extent in those days for other than equine and dairy practice; or at least they didn't in my locality.



A. T. Kinsley, head of the Kinsley Laboratories, Kansas City, Mo. Associate Editor of Veterinary Medicine; formerly President of the Kansas City Veterinary College and Professor of Pathology and Bacteriology in that institution. President, A. V. M. A. 1921-22.

The contrast of such an experience with that of the average veterinarian at this time is obvious enough without further comment. But the dairy and horse practice was markedly different from what it is now. The prevalent ailments differed.

Dairy practice in my section meant chiefly family cow practice, since there were no large dairies there and but a few small ones. The cases were largely surgical, operations on teats, operations on udders, operations to prevent self-sucking, and more perhaps than any other, obstetric operations. Of course, I should not have known hemorrhagic septicemia if I had seen it, and I am by no means sure that I saw a single case of it in my early practice. There was what was called "corn stalk disease," lots of it—some

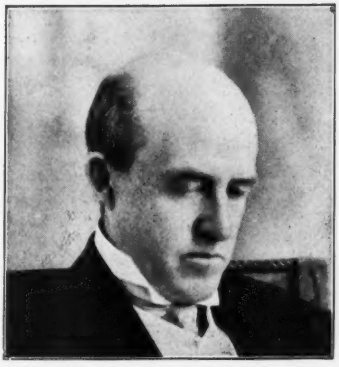
of it may have been hemorrhagic septicemia —I doubt greatly that it all was. It appears to have disappeared now. Another disease that I don't see now and have not heard of recently was "mad itch." There are those that say it is a form of hemorrhagic septicemia. I never saw any manifestations of infectiousness about it. As it existed among cattle in my section, where it was fairly common twenty-five years ago, it has certainly disappeared. Bovine abortion was exceedingly rare, and sterility problems as we now know them didn't exist.

C. J. Marshall, Professor of Clinical Medicine, School of Veterinary Medicine, University of Pennsylvania. Formerly State Veterinarian of Pennsylvania. Secretary, A. V. M. A. 1910-13. President, A. V. M. A. 1913-15.

Tuberculosis of cattle did not concern me for several years after I began practice, and I did not make a tuberculin test during my first seven years of practice. I think it reasonable to conclude that all the dairy practice in America twenty-five years ago did not equal in amount the tuberculin testing that is being done now year after year.

Horse practice too has changed in kind and amount. While other sorts have been increasing in amount and in complexity, horse practice has decreased, not only relatively, but actually and is less complicated than of yore.

The commonest type of colic has all but disappeared. I refer to that type sometimes called symptomatic, sometimes idiopathic. The kind that on autopsy (yes, autopsies were held) one never could find the slightest cause for it.



Geo. H. Glover, Dean, Division of Veterinary Medicine, Colorado Agricultural College, Ft. Collins. For forty years one of the big men in the profession in the Mountain States. President, A. V. M. A. 1910-11.

With the long, hard, fast trips now made with a flivver, the heavy road grading now done by tractors, and the heavy pulling on the farm now performed by great draft horses, whose strength is equal to the demand upon it and whose phlegmatic temperament is proof against exhaustion from worry and excitement, this, the commonest and often fatal type of equine colic, has decreased almost to the vanishing point. Perhaps on the long, hard drives to town referred to above, the irregularity in feeding and watering was also a cause of this type of colic.

During war-time when city teamsters were forced to find substitutes for the high-priced corn they had formerly fed, azoturia, one of

J. G. Rutherford (deceased), formerly Veterinary Director General, the Dominion of Canada. President, A. V. M. A. 1908-09.

Scabies. 25 years ago scab in sheep like fleas in the dog it was supposed would be always with us.

the commonest of all winter diseases, practically disappeared. It was never common among farm horses or as severe as in the city horse. It is far less common everywhere now than it was formerly.

Lameness, a prolific source of practice in the past, has decreased ninety per cent for fairly obvious reasons. Nails that used to be strewed along highways and streets and particularly in city alleys, are not so common —too destructive to pneumatic tires; nor are horses so frequently in public places. The fast work and the very heavy traction are now done almost exclusively by mechanical power. Exit a whole tribe of claudications, strained tendons, side bones, quittors, sweenies, arthritis, etc. And again, except in the case of nail pricks, it was most often the tired horse that went lame, that calked himself or his mate, that strained a tendon or ligament. The farm horse that hauled a heavy load a dozen miles to market, the city horse that delivered a heavy load of furniture miles and miles from the store, or the undertaker's horse that must get to the distant cemetery and back in an afternoon, that worked to the point of exhaustion, gave way in some part of his locomotory apparatus and went lame. The motor truck and tractor have, let us be thankful even if it does cost us the loss of practice, relieved the most faithful of animals from this killing drudgery.

The infectious diseases too are dissimilar in their occurrence and distribution. Whereas twenty-five years ago most of the horse kind in a community congregated every Saturday afternoon at the village hitch-rack and the public watering trough and swapped diseases impartially, now each farm is virtually a quarantine station for horses and mules. And where at country dances the horses used to woo pneumonia on cold winter nights, now radiators freeze up.

With all these changes veterinary practice is as interesting and useful as it ever was and as profitable too. I see no reason for gloomy forebodings as to the future.

NO EXCUSE FOR PRACTITIONERS WHO BECOME BACK NUMBERS

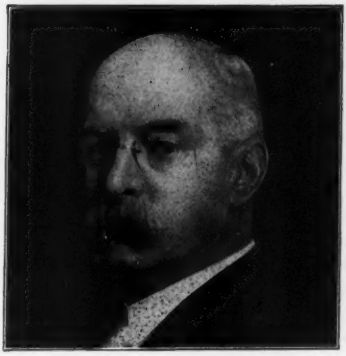
Although I have a son well established in veterinary practice, I want it distinctly understood that I am not an old practitioner—in years in the profession I come right along with the young chaps like John R. Mohler, John F. DeVine, A. T. Peters, Adolph Eichhorn, A. T. Kinsley and dozens of others who have yet to reach the zenith of their professional attainments. True it is in my early professional days, Leonard Pearson, Roscoe Bell, W. H. Dalrymple, James Law, D. E. Salmon, Sesco Stewart, W. Horace Hoskins, Joseph Hughes, S. E. Bennett, W. H. McKillip, and many others, who like these have since gone to their final reward, were the influential men in the profession, but their passing does not mean this generation has passed. Are not C. A. Cary, G. H. Glover, D. S. White, A. H. Baker, L. Van Es, R. A. Craig and many others of the same generation very much on the stage of veterinary activity right now?

Anything that I can say from personal

experience of the past of veterinary practice and the veterinary profession will be of the very recent past; in fact, of only the last twenty-five years. And the great changes that I shall point out are all the more remarkable for having occurred during that brief period.

I shall begin discussing veterinary changes with those that are not veterinary at all but have a causative relation to veterinary changes nevertheless. I refer to the high state of enlightenment of the average live stock owner as compared with the ignorance and superstition even of only twenty-five years ago. Enlightenment not only as to breeds and breeding, feeds and feeding, but as to animal hygiene and sanitation, animal parasitisms and animal diseases.

The veritable flood of literature from the U. S. Department of Agriculture and from the fifty odd state agricultural experiment stations, from the extension departments of the state universities and agricultural colleges, from the better sires associations, and the boys and girls calf clubs and pig clubs, and from the farm and live stock press, has had a tremendous influence in the aggregate in enlightening the live stock owner on live stock matters. Then the tens of thousands

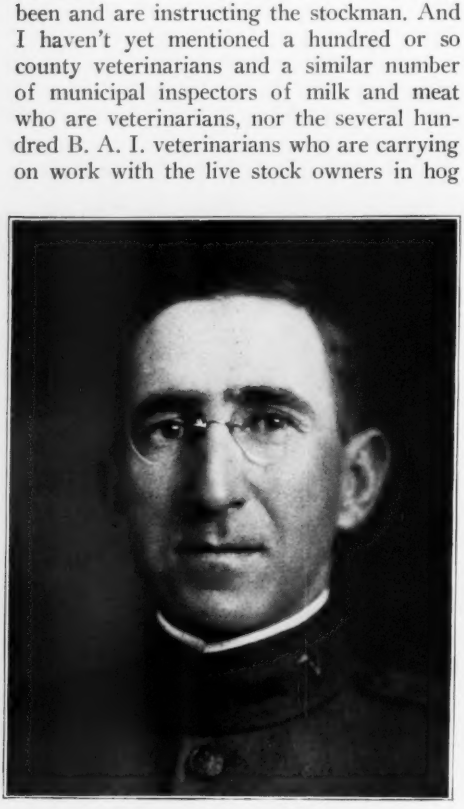


W. H. Dalrymple (deceased). One of the pioneers in veterinary medicine in the South. Dr. Dalrymple was one of the outstanding leaders of the profession in America 25 years ago. President, A. V. M. A. 1907-08.

of farm boys who have taken courses in agricultural colleges and the even greater number who have taken short courses in these same institutions and a few hundred thousand who have had some instruction in animal husbandry in the agricultural vocational schools, in the high schools and in many states even in the grades, constitute another influence that has banished much ignorance among present-day live stock owners. Then there are the grange and the

Loin disease, an ailment unknown 25 years ago

county farm bureaus and some two or three thousand farm advisers, who are just so many teachers carrying their schools to the farms, all these educational factors have been and are instructing the stockman. And I haven't yet mentioned a hundred or so county veterinarians and a similar number of municipal inspectors of milk and meat who are veterinarians, nor the several hundred B. A. I. veterinarians who are carrying on work with the live stock owners in hog



Lieut. Col. R. J. Foster, V. C., U. S. Army. Twenty-five years ago, although veterinarians rated as second lieutenants, they were not commissioned officers.

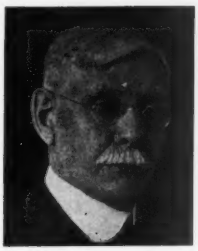
cholera control, the McLean county project, the stomach worm problem in sheep, fever tick eradication, scab control, and greatest of all in the control and eradication of bovine tuberculosis.

May I cite only two instances showing how far the average, not to say enlightened, stockman has come from the ignorance and superstition that obtained even so recently as the beginning of the twentieth century?

The first case of retained placenta to which I was called, probably in my first month of practice, was a particularly ripe one. The rule at that time was to patiently remove the offending and offensive membranes piece by piece, which I proceeded to do, and incidentally removed a number of cotyledons. The owner of the cow, for such was the patient, quickly gathered up these cotyledons and placed them hurriedly in an old pail. On my inquiry as to the reason for his action, he soberly informed me they were wild calves and that if a single one of them got away every cow on the place would lose her calf, i. e., abort. Conceivably there may have been an advantage in his action in lessening the amount of infection left in the corral—the incentive would not operate now. Soon I learned that this belief in "wild calves" was fairly common and widespread. I heard of it from veterinarians in far distant states.

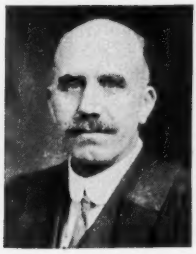
Or take an even better illustration, because this was particularly prevalent at that time. I have seen, and so has every man who began practice twenty-five years or more ago, hundreds—possibly that is an exaggeration—but certainly scores, of cows with small holes bored in their horns into which turpentine had been poured for the relief of an ailment known as "hollow horn." And when it is recalled that this ailment, imaginary or real, was almost always concomitant with another equally mysterious ailment known as "wolf in the tail," for which the recognized treatment was a slight incision in the skin near the distal end of the tail, into which ordinary table salt and pepper were rubbed, it will be seen that the veterinarian's client of today is a different individual from that of but yesterday.

True, the cases cited are extreme ones, but they existed all too frequently. Manure and filth were universally believed to be the proper environment for swine and slaughterhouse offal a delectable food for this animal. Grade stallions were in the majority; purebred bulls almost unknown among general farmers, and purebred boars all but unheard of. Magic was commonly resorted to to stop hemorrhage, and phases of the moon or signs of the zodiac regarded as being controlling influences in the castrations of animals and in their breeding too. Secret



V. A. MOORE

W. H. WELCH



C. D. McGILVRAY

V. A. Moore, Dean, New York State Veterinary College at Cornell University, Ithaca. President, A. V. M. A. 1918-19.

W. H. Welch, practitioner, Lexington, Ill. President, A. V. M. A. 1922-23. Secretary, Illinois State Veterinary Medical Association.

C. D. McGilvray, Principal, Ontario Veterinary College, Guelph, Ont.

"receipts" were far more esteemed in the treatment of animals than any known formulae.

With this preliminary, I am ready to propound a question and to answer it. Are present-day veterinary students better prepared for their work at graduation than were those of us who graduated twenty-five years ago upon our graduation? My answer is, they are not. They are better informed than we were certainly, but their responsibilities are proportionately greater. They know a great deal more of veterinary science, but the requirements of their work are proportionately more exacting. Our veterinary schools have made good progress, but they have not distanced animal husbandry in general which has progressed equally as fast. I believe they could have done better than they have.

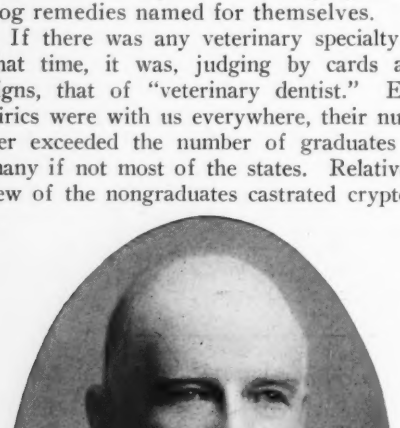
I am an enthusiastic member of three veterinary associations; I have been a regular attendant at veterinary meetings for a quarter century. My acquaintance with veterinarians is large for one not engaged in school or live stock sanitary work, i. e., for one not in public veterinary office. As mentioned heretofore, I have a son engaged in veterinary practice on his own account. Through him I became rather well acquainted with some of his classmates, and as he is practicing near me, we are together frequently. Because of all this, I think I have a rather complete mental picture of the changes that have come about in the profession from the beginning of the twentieth century right down to the present.

When I entered the profession, the man who acknowledged giving any particular attention to canine practice was regarded as somewhat of a sissy. He was quite apt to part his hair in the middle and likely wore side-burns. Perhaps canine specialists, as they called themselves then, had a better standing in the large cities. I was not familiar with practice in the large cities of the east at that time. The two of

Mark Francis, Dean, School of Veterinary Medicine, A. & M. College of Texas, College Station. Dr. Francis' leadership in the profession of the Southwest goes back considerably more than 25 years.

these specialists most heard of then were Cecil French of Washington, D. C., and Geo. S. Clayton of Chicago—both had then and have yet a line of proprietary dog remedies named for themselves.

If there was any veterinary specialty at that time, it was, judging by cards and signs, that of "veterinary dentist." Empirics were with us everywhere, their number exceeded the number of graduates in many if not most of the states. Relatively few of the nongraduates castrated cryptorchids, so there were many graduates that travelled whole counties, sometimes several counties, posing as experts in ridgling castration, which they were. The regulation fee was ten dollars, split equally between the veterinarian who found the job and the expert who did the work. Many graduates also turned their cryptorchid castration over to these travelling experts. A few of these itinerant cryptorchid castrators were nongraduates. Farmer Miles of an earlier day was one such who won great distinction in the work. The amount of cryptorchid castration at that time seems unbelievable now. Many of the experts castrated fifty to a hundred such colts annually, and the experts were numerous.



Frederick Torrance (deceased), formerly Veterinary Director General, the Dominion of Canada. President, A. V. M. A. 1917-18.

We didn't do any worrying about nongraduates in those days, or at least not the amount of worrying that some young veterinarians are doing about them at present. They were taken pretty much as a matter of course. It was the travelling quacks that in the vernacular "got our goat"—the fellows that billed a town, established themselves on a vacant lot and harangued all comers from the rear endgate of the wagon which was their home. These "itinerants" were, in the great majority, a thoroughly disreputable lot and fleeced their dupes as unmercifully as they treated their patients. Their fiendish cruelty to animals submitted to their treatment was deplorable.

There were few of what John Adams has called "nice clane jobs" in the veterinary profession in those days like the white-collar jobs of industry. The Bureau of Animal Industry and the office of state veterinarian offered about all the salaried positions open to veterinarians in those days. A few veterinarians, thirty or so, were employed in the army—they had no commissions, nor were they civil employees or enlisted men. Neither fish, flesh nor fowl.

The practicing veterinarian has been favored with many opportunities of adding to his store of knowledge by information on the new things in veterinary science. There is no excuse for his being a back number. My instruction while in school was exceedingly meager on the subject of parasitology, for example, and my son's course in this subject was by comparison very comprehensive. Yet, I can make a fecal examination and identify parasites and their eggs as readily as he does. Pathology of the hog simply was not in a veterinary course of thirty years ago. It constitutes an important part of the curriculum now, and yet as far as I am able to judge, the recent graduates that I meet are no better informed on this subject than I am. Almost the same might be said of small animal practice and poultry practice, while in the matter of problems of feeding and disease incident to or interfer-

ing with breeding, I find the newly graduated men, particularly in the former, scarcely up-to-date. Few of the recent graduates have seen a clinical case of glanders or a positive reaction to the mallein test. The experience of the war proved that few of the young veterinarians of 1917 could accurately interpret a mallein test. I think it probable that the same applies to the graduates of 1926.

Depending as they do far more on the microscope and laboratory assistance in making diagnoses than did the veterinarians of twenty-five years ago, I think the young veterinarians of today are less expert in palpation, auscultation and visual inspection in their examination of a patient and give less attention to history and environment in their diagnoses, which is unfortunate.

To sum up, there is plenty of opportunity for the veterinarian out in the field of practice to keep up with the new discoveries and new developments in his profession, and if he becomes a back number, ninety-nine times in a hundred it is due to laziness. D '01.

Post-Vaccination Difficulties

A. T. KINSLEY, Kansas City, Mo.

HOG CHOLERA is prevalent in numerous locations throughout the Corn Belt; other diseases such as necrotic enteritis, swine plague and parasitism are relatively common; and from the reports of practitioners swine losses may be excessive during the fall of 1926. Several reports have been received of losses after the administration of anti-hog-cholera serum and virus. It has been definitely established that anti-hog-cholera serum is a specific in preventing hog cholera and is of considerable value in neutralizing the filtrable virus of cholera in the early stages; however, anti-hog-cholera serum is of little or no value in the prevention or treatment of any other disease of swine.

After a careful consideration, we submit the following as possible causes of the so-called hog cholera vaccination difficulties.

1st: Swine not in condition when vaccinated and improper care after vaccination.
2nd: Swine in the incubation stage of disease.
3rd: Swine that are contaminated with gas producing microbes obtained from contaminated lots.
4th: Faulty technic of the vaccinator.
5th: Impotent serum.
6th: Avirulent virus or virus with diminished virulency.
7th: Diseases that occur after the swine are immunized and probably have no relation to the immunization.

The foregoing factors are not necessarily arranged in the order of frequency of occurrence.

THE SUCCESSFUL PRACTITIONER IS ONE THAT MAKES A CAREFUL EXAMINATION OF EVERY HERD OF SWINE PRIOR TO VACCINATION, IN ORDER THAT HE MAY KNOW THE EXACT CONDITION OF THE SWINE AT THE TIME THAT SERUM AND VIRUS ARE INTRODUCED. HE WHO DOES NOT MAKE SUCH AN EXAMINATION CAN NOT KNOW THE CONDITION OF THE SWINE AND DIFFICULTIES SUCCEEDING SUCH VACCINATION ARE PRONE TO OCCUR.

Prepare Swine Before Vaccinating

The condition of swine at time of vaccination is a very important factor in determining the success of immunization. The reaction following the injection of serum and virus in hogs that are properly prepared is usually very slight and frequently unobserved. If swine are not properly prepared for the reaction, there may be extensive losses due to hog cholera induced by digestive derangement. Swine are properly prepared for immunization by diminishing the feed three or four days prior to vaccination

and withholding all feed for twenty-four hours previous to the vaccination. The best results are obtained by using a slop feed during the period prior to immunization. Swine should receive a very limited ration for several days after immunization and the ration should consist of slops, skim milk, buttermilk or other like products. It is very probable that the extraordinary losses that occur in stock pigs are directly due to excessive feeding immediately after immunization.

Proper After-care Essential

Sixty per cent of one lot of shotes that were apparently healthy at the time of immunization, died within ten days after vaccination and on investigation it was found that these shotes had been kept in a dry lot on rather a meager ration and immediately after vaccination they were turned into a corn field, where digestive disturbances resulted as a consequence of gorging and the excessive loss mentioned occurred.

Carefully Examine Herd Before Immunizing

An apparently healthy herd may be found to be diseased when the history is ascertained and a careful examination is made. Some of the most extensive losses have occurred in apparently healthy swine that were given anti-hog-cholera serum and virus on the supposition that they were free from disease. One instance to show the importance of determining the exact condition of swine prior to the use of anti-hog-cholera serum and virus will suffice for illustration:

A Missouri practitioner was called to vaccinate one hundred 60-lb. shotes. The shotes were apparently healthy. The practitioner was familiar with the surroundings and assumed that there was no hog cholera or other disease of any importance on the premises, and he assured the owner that there would be no serious effects from the vaccination. This practitioner was surprised on the tenth day after vaccination when the owner of the swine reported ten shotes dead and several others off feed. On examination of several of the dead ones, the usual lesions that are attributed to the filtrable virus were observed, viz.: congestion and hemorrhages of various lymph glands, petechial hemorrhages in the lungs, kidney, mucous membrane of the larynx and bladder. In addition to the above, there were extensive lesions of necrotic enteritis consisting of ulcers and an adherent exudate on the intestinal mucosa. Formerly, such findings would be considered positive evidence of a cholera break. Fortunately, the practitioner in this case had vaccinated two other herds of swine in the same community using serum and virus of the same serial number that had been used in the herd in which the losses occurred and on inquiry these herds were found to be in good condition. There is no question but that the loss in this particular herd was in part due to the activity of the filtrable virus, and the practitioner was at fault for not having identified the presence of necrotic enteritis when the swine were vaccinated. It is a well known fact that swine affected with necrotic enteritis should not be given hog cholera virus.

Hog cholera in the incubation stage may not be recognized by the practitioner unless a careful examination is made in which considerable time is devoted to actual inspection of the swine and a careful consideration of the history is obtained from the care-taker. Extensive losses may occur as a result of the use of serum and virus in swine in the incubation stage of cholera. In one instance, some sixty swine weighing about 100 lbs. were given the simultaneous treatment and two days afterwards fifteen of the swine were dead and nearly all of the others showed marked evidence of disease. A careful investigation of this particular herd revealed the fact that the swine were actually sick at the time of vaccination. It is not possible to produce hog cholera in less than four or five days by the use of virus and in those instances in which cholera develops within three days after vaccination, it is practically positive that the hogs were affected at the time of vaccination.

Careful Technic Necessary

Most practitioners have developed an efficient technic for the administering of anti-hog-cholera serum and virus; however, an occasional instance arises in which post-

vaccination difficulties can be traced to faulty technic. The report of one such instance will illustrate this point:

A practitioner had been called upon to immunize a small herd of swine in the fall of 1917. The practitioner in question had been busily engaged immunizing cattle, horses, and mules against anthrax with serum and spore vaccine. This practitioner did not sterilize the syringe that he had used in administering the anthrax spore vaccine before using it as a virus syringe in the hog cholera immunization. Fortunately, only a small bunch of swine were so treated but there was a one hundred per cent loss. In one other instance, a practitioner had used his virus syringe needle to tap an edematous swelling on a mule and without sterilizing the needle proceeded to immunize eight pure-bred gilts, each of which developed malignant edema at the site of injection of the virus.

Serum and Virus Rarely at Fault

With the present regulations for the production of anti-hog-cholera serum, there is little opportunity for any licensed serum establishment marketing an impotent serum. If a virulent virus is used in conjunction with an impotent serum, there will be evidence of disease in the swine immunized in from seven to ten days and the diseased animals will be found to be affected with hog cholera.

It is possible that a virus may become attenuated particularly during the hot summer months when subjected to a high temperature for several days in transit or before it is used. A weak or avirulent virus when used in simultaneous vaccination fails to produce a reaction and the swine so treated acquire a passive immunity from the action of the serum.

Generally speaking, anti-hog-cholera serum and virus are much more constant in potency and virulency and therefore more dependable than is the condition existing in swine when immunized.

Losses May Be Due to Other Diseases

Most any condition may occur in immune swine other than hog cholera and unfortunately when these conditions do occur they are sometimes diagnosed as hog cholera breaks. It is not at all unusual to find swine immune to cholera affected with various parasitic disturbances. Such conditions can usually be readily distinguished from hog cholera and should not be reported as hog cholera breaks. Fortunately, the majority of practitioners, some state and bureau men, now recognize the fact that there are some other diseases affecting swine aside from hog cholera.

Infectious necrotic enteritis is quite prevalent. This disease usually has an insiduous onset and in the early stages there may be no evidence of the disease.

Every effort should be used to determine whether or not enteritis is present or has prevailed in a herd of swine prior to the time of administration of anti-hog-cholera serum and virus, for even though there may be limited infection of necrotic enteritis, the use of cholera virus either diminishes the resistance of the swine to such an extent that the B.suipestifer (causative factor of enteritis) becomes stimulated and produces fatal disease or the suipestifer so diminishes the swine's resistance that the virus of hog cholera will produce fatal cholera.

Several herds have been investigated recently in which swine were dying ten to sixty days after vaccination and in every instance enteritis was found quite prevalent and the principal factor in the loss of the swine.

Hemorrhagic septicemia or swine plague, should be carefully differentiated from hog cholera for the use of anti-hog-cholera serum and virus in herds affected with swine plague will intensify the activity of the B. suisepticus and the losses may be excessive.

In pigs that are extensively infected with parasites care should be exercised, otherwise, the losses may be excessive. Generally speaking, pigs should be given a reliable vermifuge before the use of anti-hog-cholera serum and virus if the best results are to be obtained. Other maladies may enter in and be factors in the loss of pigs and particularly after vaccination, but the above are the principal ones that are now prevailing.

Nutritional Problems in the Feeding of Young Animals*

PROF. F. B. MORRISON, University of Wisconsin

(Continued from October issue)

Importance of Minerals

Now let us take up this question which has received so much popular attention recently, the importance of minerals.

We all know that minerals are absolutely essential for life itself. A great deal of propaganda has been indulged in on the question of mineral supplements for live stock. Just what are the facts with reference to the matter?

First of all, all farm animals should get an adequate supply of salt, common salt.

What other mineral constituents are apt to be lacking in the ration? First of all, calcium, or lime may be lacking. Next, phosphorus. This is because young animals need large amounts of calcium and phosphorous to build their skeletons, 90 per cent of the mineral matter of the skeleton being calcium and phosphorus. Dairy cows need large amounts of calcium and phosphorus because they put a great deal into their milk.

Just what is the necessity of farmers under various conditions using mineral supplements to balance rations? It all depends on the kind of ration they are using. If the ration they are feeding is deficient in any of these mineral constituents, for example, if it is deficient in calcium, then certainly wonderful improvement will result from supplying calcium.

Prof. Hart and his associates at our institution have found that when cattle are maintained on very poor roughage, such as straw or timothy hay from acid marsh soils, there will result nutritional abortion—the production either of dead offspring or very weak offspring, due primarily to a lack of lime in the ration, and also due to a lack of vitamin which is needed for animals to assimilate and use lime. You cannot prevent it by adding a mineral supplement alone, you must also supply the vitamin. It can be very readily prevented by simply substituting good legume hay for part of this inferior roughage.

In the case of young animals, what is the evidence with reference to the need of mineral supplements? It all depends on the quality of ration, as I have indicated.

Take the ration of corn and soy beans that have been investigated by the corn belt experiment stations, especially the Indiana station. They have shown very definitely that corn and soy beans are, just as we would except from chemical analysis, deficient in lime. Therefore, when they add a mineral supplement to the ration of corn and soy beans, the efficiency of the ration is increased very materially. The Alabama experiment station finds the same thing to be true with corn and peanuts, or peanut oil meal—a ration low in lime, and benefited decidedly by supplying lime or calcium.

On the other hand, we have carried on several experiments in Wisconsin to determine whether or not there is an advantage in adding either a calcium supplement or calcium and phosphorus supplements in raising breeding stock, and also for brood sows during the winter. In these trials we have started out with young gilts weighing fifty to sixty pounds. We have begun with young gilts so that we could get full advantage from the use of the mineral supplement. The basal or check ration has been of the type we are recommending our Wisconsin farmers to use where they do not have dairy by-products available. It has been simply a combination of corn, oats, wheat middlings, with five per cent of linseed meal and five per cent of tankage, with

* From Proceedings of the Twenty-ninth Annual Meeting of the U. S. Live Stock Sanitary Association, held at Chicago, Dec. 2-4, 1925.

good pasture in the summer time and alfalfa hay fed in rack during the winter time after the gilts have been bred. Water and salt have been furnished all lots.

Right here I want to emphasize that no man should expect profit from raising pigs unless he supplies good pasture throughout the growing season, and I believe he should also supply legume hay for all hogs during the winter time.

Another lot got steamed bone meal of the very best grade; another ground limestone. The last two years another lot has received a complex mineral mixture supplying not only calcium and phosphorus but also Epsom salt, Glauber's salt, copperas, sulphur and potassium iodid. What are the results? In not a single one of these comparisons, taking an average of all the years, has there been an advantage during the growing season, either in rate of gain or economy of gain, through adding any mineral supplement except common salt to this ration, which is already a good one. Also we have been able to see hardly any difference in the returns from the sows at farrowing time, paying due attention to the vigor of the pigs, their body length and the bone development.

What does this mean? Simply this: That ration was already a good ration, containing a fair amount of calcium and a fair amount of phosphorus, so we were not surprised when we did not secure any benefit in particular by adding a mineral supplement which furnished calcium or both calcium and phosphorus. If we had had a deficient ration, we would have gotten a decided benefit. That is a point I want to clinch. In looking into the situation on a local farm and in deciding whether or not to advise that particular farmer to use a mineral supplement, you must consider the situation he is in. If he is on a soil deficient in lime, and is feeding a ration low in lime, entirely different advice should be given than if he is on a lime-rich soil and if he is using rations already rich in lime.

Vitamins Needed in Successful Rations

I will say a few words with reference to the importance of vitamins in stock feeding. Several books have now been written dealing exclusively with vitamins. On account of the limited time available, it is impossible to go into great detail regarding vitamins. I shall merely emphasize what appears in my mind to be the practical significance of each one of these vitamins in stock feeding.

Vitamin A

Vitamin A is one of the fat soluble vitamins. Butter fat is rich in this vitamin, and it is therefore of great interest to dairymen. From the standpoint of stock feeding, the points of importance, I believe, are the fact that this vitamin A is contained in liberal amounts in all green leaved plants; also, in well cured dry roughage, such as good legume hay. This means that all stock on pasture do not suffer from a lack of vitamin A. Neither do stock suffer from a lack of vitamin A when they get good green-colored roughage, such as well cured legume hay.

Dr. Steenbock discovered in 1920 that yellow corn is rich in this vitamin and white corn is deficient in it. We immediately started experiments under practical conditions to find out whether this discovery, which was made with rats, would apply to swine feeding.

In a nutshell, the relative value of yellow and white corn all depends upon the condition under which it is fed. If you take young pigs at weaning time and feed them nothing but white corn and skimmed milk, you will quite often kill some before they get to market, simply due to the deficiency of the vitamin. On the other hand, if you put in five per cent. of chopped alfalfa hay, reasonably well cured, those pigs will be just as thrifty and happy as though they had received yellow corn. With 100 or 150 pound pigs, you will not see very much difference, though there will be some difference in favor of yellow corn. However, it will not be radical, because at that time the pig has pretty well made most of its growth.

Vitamin B

The next vitamin is vitamin B, or the water soluble vitamin. This is the vitamin that prevents beriberi, which the Japanese and Chinese suffered from until they learned how to prevent it by changing their diet. Vitamin B is present in liberal amounts in all grains and in all hays, that are reasonably well cured.

Since this is so, I do not see how there can be any common deficiency of vitamin B in the rations of live stock. Neither does the American Medical Association believe there is usually any deficiency of vitamin B in the diets of humans in this country. This is a matter of importance on account of the great amount of propaganda in favor of yeast feeding to live stock and yeast to humans. According to reports of the American Medical Association, the benefits secured from yeast (and there are benefits in the case of some humans) are probably due to the fact that yeast is a very efficient laxative.

In the case of swine feeding, we have been interested in studying this matter, taking pigs right at weaning time. The Michigan and the Missouri experiment stations had previously found in two experiments that they had no benefit from adding yeast to the rations of swine when they started with pigs which were pretty well grown.

During the past two years we have carried on two experiments and are now carrying on the third, taking pigs right from their dams at weaning time. Without going into details in the experiments, I will say that we have not seen any benefit from the use of yeast, either dry yeast or where the feed was soaked and fermented with yeast. Pigs cannot appreciate their "blessings" when receiving the latter ration, because you know, of course, the function of yeast is to change sugar to alcohol. We got a good alcoholic fermentation in the feed but these pigs did not appreciate their advantages. Their gain was more expensive on the yeast feeding, even disregarding all the cost of soaking, just charging the cost of the yeast and donating all the additional time.

Vitamin C

The next vitamin is vitamin C, or the antiscorbutic vitamin.

When I am talking to farmers, I tell them that the word antiscorbutic is pretty nearly as hard as carburetor or superheterodyne and they usually smile and let me talk a little longer to them. We might as well get farmers to appreciate the fact that they should use a professional vocabulary and know clearly what some of these new terms are. To know what such words as antiscorbutic or antirachitic vitamins are may be of much more financial value to them than to know what superheterodyne or carburetor means.

The antiscorbutic vitamin, or vitamin C, is not of importance in live stock feeding, due simply to the fact that man, monkeys and guinea pigs are the only animals which suffer from scurvy. Therefore, I will not take time to discuss scurvy and its prevention. It is important in human feeding to supply an abundance of vitamin C. Many wise mothers supply their babies with orange juice or tomato juice, especially when there is any danger of a lack of this vitamin.

Vitamin D

Vitamin D is the antirachitic vitamin which prevents rickets.

Medical men say that 80% of the children in New York City suffer from rickets. Rickets is a disease of civilization. Savages never suffer from it. They may starve to death, but they never have rickets. Also, animals under natural conditions do not commonly suffer from rickets. However, in zoos you can find many animals suffering from this disease. Cats do not suffer from rickets, while dogs do. A dog is our domesticated animal; a cat condescends to live with us and retains more of her wild instincts; therefore, she does not suffer from rickets, which is a disease of civilization.

Rickets is of tremendous importance in swine feeding. I believe that most of the posterior paralysis in swine, the so-called rheumatism, is nothing but rickets, and I believe one of the best ways of pre-

venting it is the use of legume hay, even for young pigs. Now don't make the mistake of advising too much legume hay. A pig's digestive tract is a good deal like yours and mine, and we would object decidedly if our wives fed us on alfalfa hay for breakfast food.

Five per cent. of chopped alfalfa hay added to the ration of a pig in the winter time is sufficient and will prevent many of the troubles which might otherwise result. Don't increase it beyond that. A brood sow should get ten to fifteen per cent. of alfalfa hay; she has a more roomy digestive tract.

Vitamin E

The last vitamin, vitamin E or vitamin X, which has been discovered by Dr. Evans of the University of California, may be of great significance in live stock feeding. Apparently an adequate supply of this vitamin is necessary for successful reproduction. However, this vitamin is contained, as far as the data yet show, in most ordinary rations that are fed the large farm animals. Therefore, we do not yet know whether or not we need to pay any special attention to it in feeding cattle, horses, sheep and swine.

Experiments in Swine Feeding

In closing, I will make a few statements with reference to the practical significance of some of these points. We have been interested for the past seven or eight years in carrying on a rather extensive comparison of the value of various protein-rich feeds in swine feeding, starting with young pigs in dry lots or on pasture. As I mentioned before, you cannot secure good results from young hogs if you feed them grain alone, no matter what kind of grain. This is because the protein in grain is all more or less alike, all of it being unbalanced in composition. Neither can efficient results be secured from grain plus such supplements as wheat middlings or linseed meal. We have carried on five experiments where we have compared linseed meal as the only supplement to corn, with tankage as the supplement to corn, all lots of pigs having good pasture. Even when fed to pigs on good pasture, linseed meal, compared with tankage at sixty dollars a ton, was worth only about seventeen dollars and fifty cents. In other words, it was decidedly unprofitable.

At the same time we carried on experiments to see whether or not we could dilute the tankage, because if all the men who do not have dairy by-products available for their swine or poultry started to feed tankage, they would drive the price of tankage so high that it would be no longer profitable. So we wanted to see whether we could not dilute the tankage content of the ration and still secure efficient results.

To our surprise, we did better than we had expected when we substituted linseed meal for half the tankage, then feeding a ration of corn and half tankage and half linseed meal. We secured even better results than on the standard ration recommended by the experiment stations of corn and tankage for pigs on pasture. When fed in this combination, instead of linseed meal, being worth less than tankage, it was worth decidedly more—in fact on the average it was worth seventy or eighty dollars a ton.

We have also worked on what we call our fall pig problem. Many of you men come from the southern states where pigs can be raised just as well in the winter as in the summer, because pasture can be provided over a larger part of the year. In Wisconsin and other northern states, we have a saying, "If you have an enemy, give him a fall pig," simply because such poor results are often secured with fall pigs.

We have not felt, until the last two or three years, like advising men to raise two litters of pigs a year unless they had plenty of dairy by-products available and also good quarters. For some years we tried to develop a ration on which we could get just as good results as we could from corn and skimmed milk. I shall not take time to tell you of the failures we have made, but we finally worked out

a combination which gives surprising results. We can take pigs at weaning time away from their dams and feed them this ration and get them to gain better than on yellow corn and skimmed milk, a thing I did not believe four or five years ago would be possible.

This ration is a simple combination of corn, linseed meal, tankage and chopped alfalfa. If you leave out any one of those feeds the results will not be anywhere near as good. It is simply a dovetailing together of the various nutritional factors so as to make an adequate ration for young pigs.

I hope as time goes on the experiment stations can work out many efficient rations for the various classes of stock. In other words, that they can get the carburetors of these domestic animals adjusted more efficiently so that the farmers can secure better results.

Regurgitation in Ruminants

H. H. DUKES, Dept. of Physiology, Iowa State College

IN AN ARTICLE entitled "Some Gastric Phenomena of Ruminants" by L. W. Wynn-Lloyd, M. R. C. V. S., which appeared in the August issue of Veterinary Medicine, he reports some ideas on regurgitation quite different from the findings published by Dr. Bergman and myself in the August 1926, issue of the Journal of the A. V. M. A.

According to Wynn-Lloyd, "In the act of rumination the following organs play a premier part:—the esophagus, the gastric groove, the rumen and reticulum." Each of these points will be discussed separately.

That the esophagus plays a premier part in regurgitation (the word "regurgitation" as used here being synonymous with "rumination" as used by Wynn-Lloyd), it is agreed, for it is in this organ that sufficient negative pressure is developed to aspirate the ingesta from the rumen into the esophagus, and it is via the esophagus that food reaches the mouth.

That the gastric (esophageal) groove plays a consequential part in regurgitation, there is considerable doubt. The experiment of suturing together the lips of the groove, referred to by Wynn-Lloyd and credited to Flourens, was in fact done by Colin. A description of the kind of sutures used and a sketch showing where they were placed in the groove can be found in Colin's "Traité de Physiologie Comparée des Animaux," Vol. I, Paris, 1871. Colin states that the animals so treated ruminated afterwards long and well and to all appearances in a perfectly normal manner. This experiment showing that the esophageal groove plays no part in regurgitation seems to be very conclusive.

Our own findings as a result of direct examination of the groove in the ruminating animal, reported in the article referred to above, indicate that this structure plays no direct part in regurgitation.

Regarding the share taken by the rumen and reticulum in the act of regurgitation, these also are discussed in some detail in our article. There we present what seems to be conclusive proof that the rumen is quiescent at the moment of regurgitation. This evidence is based on graphic records of pressure changes in the rumen and direct observations of rumen behavior in the ruminating animal.

There is also presented in the same article evidence, less conclusive perhaps, that the reticulum does not contract simultaneously with regurgitation. This evidence is based on palpations of the reticulum in a ruminating cow through a ruminal fistula. Recently made graphic records of reticular activity in the rumi-

nating animal indicate that these findings by palpation were essentially correct, that is, that the reticulum contracts just prior to the regurgitation, the contraction reaching its height at about the time the regurgitation takes place.

Wynn-Lloyd states as his opinion "that the phenomena of rumination occur in the following order:

"1. Contraction of the abdominal muscles.

"2. Contraction of the rumen and reticulum—the latter contracting very vigorously and quickly, thus pressing the semi-fluid ingesta into the gastric groove whose lips open automatically to receive it."

In our article we also present evidence that the abdominal muscles are not contracting (at least, effectively) at the instant of regurgitation. This statement is based on the fact that rectal and ruminal pressure is not raised simultaneously with regurgitation, as would be the case if the abdominal muscles were contracting effectively, and that intrapulmonic pressure at the time of regurgitation is just the opposite (negative) of what it would be if the abdominal muscles were contracting.

To summarize, our experimental findings indicate that, with the exception of the esophagus, none of the factors mentioned by Wynn-Lloyd as being important in rumination (regurgitation) are directly concerned in the process. Entrance of food into the esophagus is brought about by negative pressure created in the esophagus by an inspiratory effort with the glottis closed, the rumen, reticulum, esophageal groove and abdominal muscles playing no direct part in the process.

U. S. PUBLIC HEALTH SERVICE DISCRIMINATES AGAINST VETERINARIANS

In a report on cooperative rural health work of the U. S. Public Health Service* much interesting data is given. Particularly notable throughout the report is the close cooperation between the county health employes and local physicians. The following paragraph illustrates the procedure:

"Special examination of 3,703 persons for tuberculosis, of whom 1,185 were found with an active tubercular process and *were advised to place themselves in care of their private physicians.*"

The following paragraph again illustrates cooperation with the local physician and that in his proper sphere the veterinarian was ignored:

"Near Drewery's Bluff (Va.) a dog went mad and bit four people, nine dogs, and two pigs before it was killed. The sanitary officer followed the trail of the mad dog, located the dogs bitten, and had them treated or killed before rabies had time to develop. In Colonial Heights the sanitary officer killed three rabid dogs and one rabid cat. All of the 75 dogs which had been bitten by these rabid animals were killed, or tied up until the incubation period had expired, or were given antirabic treatment. In all cases the sanitary officer wired for the antirabic treatment for the people and *this was given by the local physicians.*"

Here four persons that were exposed to infection were cared for by their physicians as they should have been. Eighty-nine animals, infected or exposed to infection were taken in charge and some of them treated by the sanitary officer who was not a veterinarian.

*Public Health Reports, Vol. 39, No. 42.

CAMPAIGN AGAINST RABIES

The Cincinnati Public Health Federation is conducting a campaign in that city for the improvement of methods in catching, impounding and destroying of stray dogs as a result of an increasing number of cases of rabies. Present machinery for eliminating stray dogs is severely criticised by the health authorities. Recommendations will be made to the next state legislature to amend the state law on this subject and to make the law more effective.—Bulletin, Ohio Public Health Association.

Loss of Pigs Due to Polyarthritis

A. T. KINSLEY, Kansas City, Mo.

POLYARTHRITIS is a disturbance of various articulations characterized by a subacute or chronic inflammation of the structures of the joints. This disease is essentially chronic, has an insiduous onset and is usually not identified until the affected swine are slaughtered. The extent of this disease has been difficult to ascertain because most feeders and breeders do not recognize it and only a few cases have been reported by practitioners. The most reliable information available indicating the extent and distribution of polyarthritis is to be obtained from the veterinary inspectors' reports of the post mortem findings of hogs slaughtered in packing houses. According to this information polyarthritis is more or less prevalent in swine in the north central states. The prevalence of the disease is apparently determined by climatic conditions that prevail during the period that the swine are developed. This disease is apparently not confined to any particular type or breed of swine and occurs equally in males and females. It is primarily a disease of young animals, although if affected individuals are kept, the disease will persist in most cases throughout the life of the individual. Polyarthritis is of economic importance because affected individuals are unthrifty and do not devolp and fatten normally.

Cause

Improper housing and particularly the confining of pigs on unbedded cement floors during cold weather is an important predisposing factor. Severe weather during the winter is apparently conducive to this malady, for according to the findings at abattoirs there are proportionately more cases after long cold winters and cold springs than there are when the weather has been moderate or mild.

According to some investigations the B. pyogenes is frequently found in the lesions and is thought to be a primary causative factor of polyarthritis. It may be that this disease is a sequel of navel infection or at least had its origin at the time or soon after farrowing.

Symptoms

Polyarthritis is essentially a chronic condition. The onset is insidious. The early symptoms of the disease may be overlooked by the caretaker, particularly those cases in which the disease is not severe. The first manifestations of this disease are locomotory disturbances. In the beginning the affected joints are usually swollen and sensitive. As the disease progresses the inflammatory process becomes subacute or chronic and the joints may or may not be enlarged. There will be variable interference with joint action depending upon the extent and nature of the lesions. Affected swine are unthrifty, in fact unthriftiness is sometimes the only manifestation of this disease.

Lesions

Affected animals may be underdeveloped, unthrifty and more or less emaciated depending upon the stage and extent of the disease. The lesions characterizing polyarthritis vary according to the extent, intensity and chronicity of the process. In the early stages the synovial membrane is congested, and as the disease progresses varying quantities of serous fluid accumulates in the joint cavity. In mild cases there is limited inflammation and infiltration of the synovial membranes and perisynovial structures. The serous fluid that accumulates in the joint cavity is usually turbid and may contain coagulated material.

In the later stages particularly of the chronic cases there will be a thickening of the synovial membrane due to fibrous proliferation. Fibrous formation may involve the perisynovial structures and be sufficiently dense to render the joint immobile or nearly so. The articular cartilages may be eroded

and there may be organization and fibrous proliferation within the joint cavity, thus rendering movement impossible. Lesions typifying complications of various other diseases may be noted.

Treatment

Treatment for swine affected with polyarthritis may be of value in the very early stages. Unfortunately the disease is frequently not recognized until the latter stages at which time treatment will be of little or no value. During the acute inflammatory stages the disease may be temporarily relieved and in some cases overcome by the application of hot packs to the affected joints. This treatment would not be practical except in high-priced individual breeding animals.

Polyarthritis can be reduced to a minimum by breeding only healthy sows; by providing sanitary surroundings for sows during farrowing; and by properly housing pigs and shotes and bedding provided to prevent contact with cold damp floors.

Meats and Meat Food Products

THE FOLLOWING definitions and standards for meats and the principal meat products were adopted by the Secretary of Agriculture July 3, 1926, and published as Food Inspection Decision 205:

Flesh is any clean, sound, edible part of the striated muscle of an animal. The term "animal," as herein used, indicates a mammal, a fowl, a fish, a crustacean, a mollusk, or any other animal used as a source of food.

Meat[1] is the properly dressed flesh derived from cattle, from swine, from sheep, or from goats, sufficiently mature and in good health at the time of slaughter, but is restricted to that part of the striated muscle which is skeletal or that which is found in the tongue, in the diaphragm, in the heart, or in the esophagus, and does not include that found in the lips, in the snout, or in the ears; with or without the accompanying and overlying fat, and the portions of bone, skin, sinew, nerve, and blood vessels which normally accompany the flesh and which may not have been separated from it in the process of dressing it for sale.

Fresh meat is meat which has undergone no substantial change in character since the time of slaughter.

[1]The term "meat" when used in a qualified form, as, for example, "horse meat," "reindeer meat," "crab meat," etc., is then, and then only, properly applied to the corresponding portions of animals other than cattle, swine, sheep, and goats.

Beef is meat derived from cattle nearly 1 year of age, or older.

Veal is meat derived from young cattle 1 year or less of age.

Mutton is meat derived from sheep nearly 1 year of age, or older.

Lamb is meat derived from young sheep 1 year or less of age.

Pork is meat derived from swine.

Venison is flesh derived from deer.

Meat by-products are any clean, sound, and properly dressed edible parts, other than meat, which have been derived from one or more carcasses of cattle, of swine, of sheep, or of goats, sufficiently mature and in good health at the time of slaughter.

Prepared meat is the clean, sound product obtained by subjecting meat to a process of comminuting, of drying, of curing, of smoking, of cooking, of seasoning, or of flavoring, or to any combination of such processes.

Cured meat is the clean, sound product obtained by subjecting meat to a process of salting, by the employment of dry common salt or of brine, with or without the use of one or more of the following: Sodium nitrite, sodium nitrate, potassium nitrate, sugar, a sirup, honey, spice.

Dry salt meat is the prepared meat which has been cured by the application of dry common salt, with or without the use of one or more of the following:

Sodium nitrite, sodium nitrate, potassium nitrate, sugar, a sirup, honey, spice; with or without the injection into it of a solution of common salt to which may have been added one or more of the following: Sodium nitrite, sodium nitrate, potassium nitrate, sugar, a sirup, honey.

Corned meat is the prepared meat which has been cured by soaking in, with or without injecting into it, a solution of common salt, with or without one or more of the following, each in its proper proportion: Sodium nitrite, sodium nitrate, potassium nitrate, sugar, a sirup, honey, and with or without the use of spice.

Sweet pickled meat is the prepared meat which has been cured by soaking in, with or without injecting into it, a solution of common salt with sugar, a sirup, and/or honey, together with one or more of the following, each in its proper proportion: Sodium nitrite, sodium nitrate, potassium nitrate, and with or without the use of spice.

Dried meat is the clean, sound product obtained by subjecting fresh meat or cured meat to a process of drying, with or without the aid of artificial heat, until a substantial portion of the water has been removed.

Smoked meat is the clean, sound product obtained by subjecting fresh meat, dried meat, or cured meat to the direct action of the smoke either of burning wood or of similar burning material.

Canned meat is fresh meat or prepared meat, packed in hermetically sealed containers, with or without subsequent heating for the purpose of sterilization.

Hamburg steak, "Hamburger steak," is comminuted fresh beef, with or without the addition of suet and/or of seasoning.

Potted meat, deviled meat, is the clean, sound product obtained by comminuting and cooking fresh meat and/or prepared meat, with or without spice, and is usually packed in hermetically sealed containers.

Sausage meat is fresh meat or prepared meat, or a mixture of fresh meat and prepared meat, and is sometimes comminuted. The term "sausage meat" is sometimes applied to bulk sausage containing no meat by-products.

Meat food products are any articles of food or any articles that enter into the composition of food which are not prepared meats but which are derived or prepared, in whole or in part, by a process of manufacture from any portion of the carcasses of cattle, swine, sheep, or goats, if such manufactured portion be all, or a considerable and definite portion, of the article, except such preparations as are for medicinal purposes only.

Meat loaf is the product consisting of a mixture of comminuted meat with spice and/or with cereals, with or without milk and/or eggs, pressed into the form of a loaf and cooked.

Pork sausage is chopped or ground pork, with or without one or more of the following: Herbs, spice, common salt, sodium nitrite, sodium nitrate, potassium nitrate, sugar, a sirup, water, vinegar; and may be fresh, dried, smoked or cooked.

Brawn is the product made from chopped or ground and cooked edible parts of swine, chiefly from the head, feet, and/or legs, with or without the chopped or ground tongue.

Head cheese, mock brawn, differs from brawn in that other meat and/or meat by-products are substituted, in whole or in part, for corresponding parts derived from swine.

Souse is the product consisting of meat and/or meat by-products; after cooking, the mixture is commonly packed into containers and covered with vinegar.

Scrapple is the product consisting of meat and/or meat by-products mixed with meal or the flour of grain, and cooked with seasoning materials, after which it is poured into a mold.

A small daily ration of codliver oil for laying hens increases the fertility of eggs, without objectionable blood spots, and apparently increases the size and number of eggs produced during a certain period, without any bad effects on the hens.

Autotoxemia as a Cause of Chronic Disease

G. W. BROWNING, Mobile, Ala.

IT IS always well to remember that autotoxemia and auto-intoxication are not interchangeable terms. You may be slightly poisoned without being drunk. Autotoxemias are of a boundless variety of forms and grades of severity, while auto-intoxications are of only a few forms and are always apt to have a fatal termination, like azoturia in the horse, parturient paresis in the cow, black tongue, puerperal eclampsia, diabetic and uremic coma in the dog.

What is an autotoxin? Why, one of the waste products of digestion, absorption, assimilation and metabolism, which must be eliminated from the body by means of the bowels, kidneys and skin, and which nature is sometimes unable to cast out. The number of autotoxins that can be developed by conditions of imperfect elimination is enormous, and their multiferous methods of hindering the vital processes of the animal body would give a man ample occupation for a long life of study. We do not seem to have named many of them as yet, except uric acid and urea. Like most of the curative principles in the botanic materia medica, we know perfectly well what they will do, but have no names for them. After a quarter of a century of the closest, most careful and constant observation and study of chronic diseases, especially of dogs, I have found that about 90 per cent of them are caused by autotoxemia and about 10 per cent by specific germs.

One of the most vitally essential qualities that a veterinarian can cultivate and develop is the ability to differentiate between a disease caused by morbid waste matter in the system and one caused by some pathogenic microbe. This is absolutely essential to doing the best work in this line, as the hired microscopists and pathologists in the employ of the great pharmaceutical companies are engaged in a most energetic advertising campaign with the object of making innocent and credulous veterinarians believe that all chronic diseases are caused by germs. These men do not differentiate between arthritis, which is strictly a disease of germ origin, and rheumatism, which is the most typical autotoxemia we have to deal with. To any man who has for years watched the onset of rheumatism where elimination was very poor and its rapid subsidence where elimination was improved, the attempt to treat rheumatism with serums and bacterins is pitiful and absurd.

A few years ago a "detail man" representing a large commercial laboratory tried to make me believe that the myriads of bacteria of fermentation and decomposition that inhabit the animal alimentary canal were all "disease germs," and he was a graduate of a reputable veterinary college and should have known better.

Among our most common autotoxemias, we find rheumatism, laminitis, asthma, dyspepsia, gall stone attacks, chronic congestion, and inflammation of the liver, and a vast number of unnamed conditions of pain, distress and disability caused by a sluggish and defective action on the part of the bowels, liver and kidneys. It is pretty sure evidence of the presence of uric acid and urea and some of their pirate companions in the system.

Besides general or systemic autotoxemias, we are often asked to treat mild or local toxemias which are sometimes exceedingly stubborn, such as erythema or itching eczema and several eye affections.

Treatment: This should be largely eliminative, bearing in mind that the primary cause is usually constipation. Constipation almost always has some attention paid to it, but a regular yet altogether insufficient action of the bowels often allows the patient to get into a very serious condition of autotoxemia, while the veterinarian is thinking the animal is all right.

With regard to our success in relieving and preventing autotoxemia, it is an exceedingly unfortunate thing that so many veterinarians are satisfied with any kind of a laxative that will produce any kind of a movement of the bowels. It seems to be thought sufficient by many practitioners to stimulate the direct action of the bowels and the flow of urine from the kidneys, without remembering that the most dangerous autotoxins that oppress the animal are not in the bowels or kidneys and that in the most serious cases nature unaided is absolutely unable to get the toxins out of the body.

Doctors who practice advanced therapeutics should have more efficient eliminative remedies than laxative agents that have a merely mechanical action like phenolphthalein or castor oil. If things like these are the best we have to offer the man to administer to his dog, whose autotoxemia is making him miserable, the owner might just as well buy himself ten cents worth of castor oil and not employ a veterinarian at all. In order to render elimination normal, we must stimulate the action of the glandular system of the body and use remedies that throw off the greatest possible amount of body waste. Each laxative we give our patients should be a definite medical prescription carefully planned and devised to produce the highest possible degree of elimination. The best article of this kind that I have ever been able to find is a pill called the gastro-hepatic pill. Its contents are podophyllin, aloin, hydrastis, leptandrin, gamboge and capsicum. This pill has an action in a way not usually expected of a laxative in that it is very useful to remove residues and remainders of undigested food from the alimentary tract.

We very often encounter cases of autotoxemia where the lower bowels are loose and hemorrhagic, complicated with hepatic congestion and sometimes gall stone colic, and while elimination is required in these cases, the aforementioned prescription would not be appropriate on account of its irritating properties. For these conditions I use Chionanthus, the specific tincture or tablets of the Chionanthus compound put up by the Drug Products Co. of New York City. These pulvoids are sugar-coated, blue, and listed as P-439. I think a whole lot of this formula. For these cases where it is necessary to keep up treatment for some time and puppies are convalescing from distemper but still have more or less toxins bottled up in the system, the daily use of these blue tablets will clear up the condition better than anything else I have ever used.

In place of the gastro-hepatic pill as described, of late years I have been using a similar pill put up by the Upjohn Company of New York City, listed as vegetable pill, improved (page 100 of their late price list). I don't want it understood that I am advertising any commercial house's products, although I buy a little from nearly all of them and not much from any of them. However, where they keep what one wants, they are a great convenience to the busy practitioner.

In some cases patients do not seem to have a normal degree of peristaltic action in the alimentary canal, and for these patients a good, strong prescription in liquid form of Podophyllum, Chionanthus, Hydrastis and Iris, is very useful. For all troubles caused by gall stones or thickened bile, the specific tincture of Chionanthus is the best and most efficient remedy ever brought into use. It thins the bile so positively and thoroughly that by using it intelligently and persistently, you can practically insure against a recurrence of the trouble. It is always best to reinforce its action by the addition of Chelidonium, Podophyllum and Veratrum.

For that form of autotoxemia caused by a passive or chronic congestion of the liver, which is often seen in old and over-fat dogs and whose principal symptoms are pain on the right side and lameness in the right foreleg, the specific tincture of Chelidonium, assisted by Bryonia, Gelsemium and Veratrum, is our best helper. A form of autotoxemia that causes an engorged and sore liver is a condition that often complicates severe attacks of rheumatism and stomach trouble in dogs and is often overlooked by the attending veterinarian, very much to the detriment of his chances of effecting a cure. In a case like this, no matter what other medicine you may be using, be sure to get

in specific Bryonia, Gelsemium and Veratrum.

In every case of acute rheumatism of whatever kind, whether inflammatory or sciatic or in the form of acute bronchial asthma, you are going to have to help nature re-establish normal elimination before you will bring about a good and quick cure. Of course, one will show his raising by making the most expert use of Bryonia, Gelsemium, Veratrum, Rhamnus Californica, Pulsatilla, Cimicifuga, etc., but you must also take energetic measures to send all those autotoxins that caused the trouble on their way out of the system.

Always remember that each and every rheumatic patient is an animal being oppressed by a multitude of autotoxins, and it is up to you as an apostle of advanced therapeutics to use such agents as will get the obnoxious material out of the system as rapidly as possible. The uric acid and urea are the captains of the band of pirates, but there are a multitude of other toxins working in company with them. You absolutely must re-establish normal elimination before you can get your patient well. You are practically sure to need Apocynum to help set going normal elimination of urinary solids, and you are altogether likely to need Podophyllum, Chionanthus and Rhamnus Californica to help make the liver do its part toward aiding the outgoing shipments of uric acid and urea.

After a quarter of a century of careful observation and study, I have no hesitation in saying that I consider Podophyllum peltatum, Iris versicolor and Apocynum cannabinum easily the leaders in the treatment of all forms of autotoxemia caused by defective action of the liver and kidneys.

As I mentioned bronchial asthma in connection with rheumatism, where it belongs, I should not let this opportunity pass to state that I have always found liberal doses of Hyoscyamus and Lobelia very helpful in relieving the acute attack.

One will often meet with resentment from the owner of the patient when he is informed that the beginning of the trouble was due to constipation. He will exclaim that the animal's bowels are very loose and have been for some time. As veterinarians we should pay no attention to this, unless we are absolutely sure that it is the case, as stasis and toxemia cannot be gauged by the number or consistency of the bowel movements. Animals may have one, two or more evacuations daily and may nevertheless harbor stagnant feces for weeks. Decomposing masses accumulate in the cecum and first part of the colon where they act as irritants and set up catarrh of the mucous membrane —colitis. Fecal material is carried through the irritated bowel in small quantities mixed with mucus until enough has accumulated in the pelvic colon and rectum to cause an evacuation. There may be several evacuations, but nevertheless the cecum remains packed. The ileum is unable to propel its contents into the tensely filled cecum, and the lower ileac coils become a cesspool teeming with micro-organisms which set up intense toxemia.

In discussing this subject, I have given treatment only in a general way as we should endeavor to remove pathological conditions rather than treat by disease names. And in regard to the autotoxemias I feel that while we have learned much in the last few years in regard to what poison will do in the system, yet there is much for us to find out. I think there is a rich field there for investigation. There are many diseases about which we are in the dark, and when they are thoroughly studied, I believe they will be traced to autotoxemia. I think they should be studied more than they have been up to this time.

There has been considerable controversy relative to the passage of the larvae of the ox warble from the location of the egg to the subcutaneous tissue in the dorsal region of its host. According to the results of a comprehensive investigation made by the U. S. Department of Agriculture, reported in Bulletin 1369, the larvae penetrate the skin near the point where the eggs were deposited and migrate through the subcutaneous tissue to the region on the back.

Treatment of Acute Metritis, Endo-Metritis and Metro-Peritonitis*

J. F. DE VINE, Goshen, N. Y.

IN ORDER that my fellow practitioners may not be bewildered by the heading of this article I will try to set them at ease at once by stating that these classifications are given by pathologists. I am one of the poor unfortunates who cannot always make a differential diagnosis. However, in some cases the difference seems quite apparent.

The term metritis, like endometritis, is somewhat loosely used to designate various inflammatory and circulatory changes in the body and the horns of the uterus. Here again we speak of the "body" of the uterus but as a matter of fact there is really no such thing. It is common knowledge that bifurcation begins practically at the end of the cervix, but still we feel that we must adhere to these old terms and distinctions until they are gradually worked away. I recall while at college listening very intently to how drafts, cold water and the like brought on retained placenta, and hours were spent in explaining the careful attention necessary during the act of parturition and immediately after to avoid this serious phenomenon. We all realize now how much truth there was in such teachings.

The two factors that enter almost always, if not always into the cause of metritis are:

First, intra-uterine infection with resultant placentitis and cotyledonitis. The Bang organism is supposed to be the big fellow in this case.

Second, introduction of infection into the uterus during or after parturition, particularly in cases of dystocia or rough handling of retained membranes. Of course, by far the most dangerous form of uterine infection is acute metritis or acute metroperitonitis. It might be well before outlining the treatment that has given us best results to review the symptoms.

Symptoms: Clinically this is one of the most irregular, uncertain and treacherous pathological conditions associated with parturition. The severity of the infection, the extent of the area involved and the constitution of the animal would appear to be logically the three factors to govern its advancement or termination; however, my experience leads me to believe that the resistance of the individual animal has more to do with its subsidence, or its progress to puerperal septicemia and death than have the character and extent of the infection. True, we are only guessing at the virulence of the organisms, but when we see a number of cases in the same herd, as we frequently do, we cannot help but doubt that each case harbors its own individual strain.

I have repeatedly had occasion to examine cattle, particularly pure-breds, where the objective symptoms appeared to be comparatively mild. Examination of the uterus also revealed what appeared to be a rather mild inflammatory condition, and still such an animal would rapidly develop a temperature of perhaps 106° F; loss of appetite; suppression of the milk flow; constipation or diarrhea; loss of flesh as if it were melting away; complete and absolute anorexia, oftentimes not even taking a drink of water; pain on pressure over the uterus, the soreness so intense as to discourage lying down; grunting; moaning; grinding of teeth; the eyes become sunken; the ears drooping; the animal listless, finally lying

*Discussion of this subject is given because of the many recent requests for information received by the author from practitioners.

down from exhaustion; living perhaps a day or two and then dying irrespective of how intelligent the treatment or faithful the nursing; in a word developing fatal septicemia from what appeared to be at the onset a very mild form of metritis.

The postmortem findings of such an animal often are almost unbelievable to see how limited in area and intensity is the metritis or metroperitonitis as well as the slight morbid lesions of other organs and tissues which are ordinarily involved; particularly when we compare such a case and termination with the old rugged grade cow that has suffered eversion of the uterus, lying perhaps in a most filthy drop half a night, even trampled by the other stock, and the uterus replaced with care that seemed to be directed principally to having adhere to it all the filth and infection possible. We have seen cases like this where after a few days the odor would drive one from the building and still the cow would never miss a feed, show no systemic disturbance, very little discharge, be a useful, productive cow for the milking period and in some instances conceive with usual regularity. Or again, take the same rugged type of cow that has held her membranes, which protrude, are exposed and dragged about a filthy stable acting as a bridge on which infection may mount to the uterus, and in due time become so putrid that the stench would be almost unbearable, the vulva and vagina hot and swollen. Examination of the uterus reveals severe metritis throughout the recently gravid horn; there is frequent straining and more or less offensive discharge, varying in character from mucosanguinous to mucopurulent, and in herds that have suffered a violent outbreak of contagious abortion, we have seen the discharge later become diphtheritic in character and in some cases be expelled for a period of several weeks in curds of yellowish white or grayish white masses, containing shreds of sloughed tissue.

Notwithstanding this apparently intense metritis we have seen such an animal develop a temperature of not more than a degree or two above normal; appetite remain good, and with reasonable care and good diet, milk up fairly well in a short time and gradually become quite well. And so under acute metritis or metroperitonitis we have this varied set of symptoms and terminations.

It is true that some of these cases develop the alarming symptoms that we have enumerated above as indicating probable fatality, but the unusual thing about it is that they do not all become prostrate. When such cases do prove fatal the postmortem changes will be more in keeping with what one would expect to find associated with the pronounced clinical symptoms. There is more or less effusion or serum in the abdominal cavity (plainly detectable before death by palpation in some cases that are not of the very acute type); the cavity of the uterus is found to contain a varying quantity of a chocolate-colored or grayish fluid with a very offensive odor. There may also be other debris such as shreds of decaying fetus or fetal envelopes. The uterus is now contracted as in the normal condition; its walls are thickened, friable, soft, intensely red or dark and liver-colored and infiltrated with inflammatory products. There may be more or less parametritis involving the bladder and adjacent tissue, and in cases where the blood vessels suffer with thrombi, the adjacent vascular changes will be pronounced.

When true septicemia has intervened, its evidence may be confined wholly to adjacent lymphatic glands, or metastasis may be so pronounced as to give rise to abscess formation in such organs as the lungs, liver, spleen and kidneys.

It would seem, therefore, that the termination will depend much upon the animal's resistance and some upon early and proper attention.

Treatment: As to treatment, one thing that we are probably all agreed upon is that it is not safe to attempt to give an acutely infected uterus much surgical attention, particularly if the inflammatory condition is extensive.

As to medication, each one is apt to have his own line of treatment which he feels has given him the best results. As for us, we never had any best results in our severe cases until we learned how to properly use mixed metritis bacterins—not in a two cc. dose but eight or ten cc. and not once a week but every twelve or twenty-four hours, just as we use our bacterins in treating a case of septicemia hemorrhagica or pneumonia. Give large doses and repeat until there is marked improvement, just as you would if you were using a drug, lessening the dose and the frequency as the case responds. We have frequently stated, and here repeat, that bacterins have robbed these cases of the terror that they have so long held for the rural practitioner.

We will discuss the treatment of chronic endometritis in another article next month.

Doctor Ratigan's Pet Animal Store

UNDER the name of Betty Brown's Dog Food Shop, Dr. W. J. Ratigan conducts a pet animal store near the busiest corner in New Orleans, La. The building is eighteen by eighteen feet, and the rent is $400 a month. No animals are sold in the place, but all kinds of food supplies and equipment for dogs, cats, birds, fish, etc., are handled.

Dr. Ratigan states that the business pays and that the stock turns over at least every two months. Only the best lines of equipment are carried, including imported leather goods, blankets, combs, brushes, etc., as well as the best of American manufacture. The woman in charge of the store is secretary of the Louisiana Kennel Club and well acquainted with the various requirements of pet animals.

The different kinds of foods sold for dogs, cats, birds, etc., are manufactured in Dr. Ratigan's own factory, where he puts up his own brands of dog and puppy food, puppy krumbles, cat and kitten food, mocking bird food, canary seed, parrot food, fish food, etc. He also prepares quite an extensive line of soaps, disinfectants, flea powders, tonics and laxatives for small animals.

Dr. Ratigan's dog and cat hospital is located in the residence section of the city, an old mansion having been converted to this use. A description of the establishment with illustrations appeared

in the January, 1925, issue of Veterinary Medicine. Dr. Ratigan states that the hospital advertises the pet store and the store advertises the hospital.

Interior of food shop

Process room of the food factory

Poisonous Plants

L. H. PAMMEL, Dept. of Botany, Iowa State College

HOUND'S TONGUE AND WIRE-SEEDED MERCURY

Mr. J. A. Bockenstedt, New Vienna, Iowa, writes a letter asking me about certain plants in his pasture. Only four of these plants are considered toxic. The list of plants is as follows:

Yarrow, nettle, daisy fleabane, Mexican dropseed grass, clear weed, smart weed, bull thistle, three-seeded mercury, horse weed, and greater ragweed.

Of the ten plants that were sent me, the common nettle (Urtica gracilis), three-seeded mercury (Acalypha virginica), hound's tongue (Cynoglossum virginicum), and smart weed (Polygonum acre) may be injurious. The three-seeded mercury is a member of the spurge family which contains a great many toxic plants, like the castor-oil bean, croton, etc. The three-seeded mercury is a smooth or hairy annual often turning purple in the autumn, with inconspicuous flowers. It is rather distasteful to cattle but on several occasions has been suspected of being poisonous. The wild comfrey, or hound's tongue, is common in our woods in the central Mississippi valley, and from New Brunswick to Ontario, Florida, Louisiana, Texas to Minnesota and into Iowa. It contains a powerful alkaloid, cynoglossin, which resembles curare in its action. The nettle is chiefly injurious because of its urticating properties, and the smart weed also is injurious because it produces an irritation of the skin.

DOGWOOD SUSPECTED OF BEING POISONOUS

Dr. Arthur L. Smith, of Mechanicville, N. Y., writes as follows:

"I am sending you specimen of bush that grows around the fences of pastures that are not well kept. Cows eat the berries and leaves of this plant and I was wondering what is known of its poisonous properties. It grows 5 or 6 feet high."

The specimen sent is the silky cornel or Kinnikinnik (Cornus amomum), the bark of which was used by the Indians for smoking.

Several species of dogwood and related genera are suspected of being poisonous, though Greshoff lists the above species

sent by Dr. Smith as possibly poisonous.

The fruit is rather insipid and has an unpleasant flavor. The bark contains the principle cornin.

I should like to hear of positive cases of poisoning and the symptoms.

IS BLACK NIGHTSHADE POISONOUS?

Mr. W. F. Coddington, of LeMars, Iowa, sent the following letter:

"Under separate cover I am sending a weed submitted by F. M. Lieb of LeMars, R. 5, for identification and eradication prescription. Is this weed poisonous to livestock?"

The weed sent is the stubble berry or black nightshade, known to botanists as Solanum nigrum. The ripe berries of this weed are probably not poisonous but the green parts of the plant, like many other members of that family, are poisonous. They contain several active principles.

It is related, of course, to the Jimson weed but the action of Jimson weed and black night shade and their relatives are somewhat different.

SNOW ON THE MOUNTAIN

Mrs. Walter C. Fox, Britt, Iowa, writes as follows:

"Enclosed find a flower which we have been told is poisonous to sheep if they should happen to eat them. Please let me know what you think about it."

The plant sent is snow-on-the-mountain (Euphorbia marginata). It is common to western Iowa and poisonous. It is common also west to the Rocky Mountains. It is cultivated for ornamental purposes. It is easily recognized by the pale margins of the leaves and "white flowers."

The spurges contain the substance euphorbon which acts as an irritant to the mucous membrane of the alimentary tract. Animals consuming the weed become languid and drowsy; and there is oppression and ulceration of the stomach. It was formerly used to brand cattle, it being a strong irritant causing the hair to fall out.

"TREMBLES" AND "MILK SICKNESS"

The close relation between the disease known as "trembles" in cattle and "milk sickness" of persons has been the subject of scientific investigation for many years. A recent outbreak of the disease in Illinois caused the death of 15 persons, according to reports reaching the United States Department of Agriculture early in October. The outbreak is a repetition of many similar ones throughout the country and recalls heavy death losses among early pioneers from a mysterious disease.

Recent experiments by Dr. James F. Couch, of the Bureau of Animal Industry, have resulted in new information that promises to be beneficial to the public and the livestock industry. The experiments, supplementing those of other investigators, show conclusively that poisonous plants cause trembles in cattle, sheep, horses, and other animals, that animals also may be poisoned without showing symptoms of trembles, and that milk and butter from cows so poisoned are dangerous to the consuming public. The results explain also a condition which observing farmers had been reluctant to believe, namely, that milk sickness among persons may occur in the winter, when the poisonous plants are dormant.

A summary of the bureau's latest findings includes the following facts: Two plants are responsible for trembles in livestock. In the East and Central West the poisonous plant is the richweed, also known as white snakeroot. In Texas and New Mexico, where the animal malady is called "alkali disease," the poisonous plant is the rayless goldenrod. Richweed is a slender plant, from 2 to 4 feet high, with leaves from 3 to 5 inches long, pointed and thin. It is widely distributed in the eastern part of the United States and as far west as Minnesota and Nebraska, and as far south as Louisiana. It is found generally in rich soil in damp woods. Rayless goldenrod, known in some localities as jimmy weed, is a stout,

erect, tufted perennial herb, commonly from 1 to 2 feet, but it may grow taller under favorable conditions as on the banks of irrigating ditches. The leaves are narrow and about 1 to 2 inches long, usually with stout, stiff hairs on the margins.

Animals may be poisoned by the dry richweed plant—such as in hay—in winter, but still not have trembles. This fact is due to the presence of three poisonous substances in richweed, only one of which causes symptoms of trembles in cattle and milk sickness in human beings. This poison, which is a complex alcohol, has been named "tremetol." The other two poisons are a resinous acid and a volatile oil.

The poison of the rayless goldenrod has not been studied so completely, but is known to be dangerous when the plant is either green or dry.

Authentic records of numerous serious illnesses and deaths furnish abundant evidence that the products of poisoned animals are dangerous for human consumption. In some localities doctors have specialized in treating milk sickness and medical reports contain frequent references to the mystery of the disease, and of heavy "fatalities" and "panic" among settlers. Milk and butter from dairy cattle that have consumed either of the plants mentioned are considered gravely dangerous, though a conclusive chain of evidence leading directly to these products has not yet been established. This fact is due perhaps to the tendency of scientific workers to keep within their respective fields of animal and human pathology.

Even when milk sickness is not fatal to man, there usually follows a long period of illness and reduced vitality. Stock owners are advised to combat the poisonous plants mentioned by pulling or digging them up wherever found. Especially during the fall animals also should be kept out of pastures infested with the poisonous plants.

As a further means of combating milk sickness and diagnosing suspected cases, Doctor Couch has developed a laboratory test for tremetol. Directions for making the test will be furnished on application to the Pathological Division of the Bureau of Animal Industry, United States Department of Agriculture, Washington, D. C.

VETERINARIANS NEEDED

Improved conditions in the livestock industry, together with the breeding of better animals and the extension of sanitary measures, have increased the demand for graduate veterinarians, according to Dr. C. A. Cary, head of the veterinary department of the Alabama Polytechnic Institute, which has graduated more than 200 veterinarians during the last few years. The upward trend of values has stimulated the livestock industry, particularly in the production of beef cattle, dairy products, poultry and mules. The dog industry is also breeding a greater number of valuable dogs than ever before. There is an increasing demand for trained superintendents for sanitary abattoirs, milk and food inspectors and other positions which are most acceptably filled by graduate veterinarians. Dr. Cary enumerated a number of graduates who have done well in private practice, some reaching a gross income of more than $17,000 annually. Others have devoted themselves to teaching in agricultural colleges, some have entered the government service in the bureau of animal industry and the United States Army, while many are connected with state departments concerned with disease prevention and inspection work. In view of Dr. Cary's statement that there is an excellent and growing field for graduate veterinarians, it may be expected that more young men, particularly those who have a liking for animals, will consider entering this promising and useful profession.—Lubbock (Tex.) Avalanche.

Shortage of Anti-Hog-Cholera Serum

An acute shortage of anti-hog-cholera serum is being experienced this fall throughout the country. The U. S. Department of Agriculture states that the situation is made more serious by the fact that a large proportion of the hogs in the United States have not been immunized due to the low ebb of cholera in recent years. More than that, hogs at this season of the year are of good size and a great many are being fattened for market. Large hogs require more serum for proper immunization than small pigs, thus increasing the present demand.

An emergency ruling by the Department of Agriculture has permitted the release of serum under an eleven-day test instead of the usual twenty-one days' testing required under normal conditions. It had been requested that the test be dispensed with entirely, but the federal authorities stated that they deemed this unsafe. Eleven-day test serum must be so labeled, but manufacturers are not held responsible for its effectiveness any more than they are under the regular test.*

Hog cholera is at the present time widespread in Ohio, Indiana, Illinois, Minnesota, and Iowa except the extreme southern part of the state, northeastern Nebraska and southeastern South Dakota. So great has been the demand for anti-hog-cholera serum since the first of June that all the reserve supply has been exhausted and the serum plants have been unable to meet the demand since the middle of September.

In Iowa the outbreak of cholera is characterized as the worst that has struck the state in the last five years, while in some localities it is said to be the worst in ten years. The fear has been expressed that the loss will run into millions in that state alone. The existing supplies of serum had been contracted for in advance for weeks, and companies have been unable to meet the demands. As a result the price has gone up considerably, but this would be no deterrent to immunization if the materials were available.

Dr. K. W. Stouder, extension veterinarian of the Iowa State College, stated: "Many farmers have lost entire herds, and there is hardly a neighborhood that has escaped the cholera. It is the heaviest loss of hogs experienced in five years. All the hogs dying are not dying from cholera, however. Many deaths are due to mixed infections and to parasites. It has been impossible to get the serum as rapidly as it is needed. One reason for the delay is that during the last few days little serum has been manufactured as there was not much need for it, and the production could not be increased as rapidly as necessary to meet the increased demand."

Dr. J. A. Leuth of Council Bluffs, Ia., stated that education is the only remedy the farmers have in combatting hog

* Since the above was set in type the U. S. Department of Agriculture has instructed its inspectors to release serum without test, as described in the article on page 548 of this issue.

cholera and to attack the spread of the plague. He said he was trying to break down the belief of many that winter weather will stop the disease. He stated that it thrives just as readily during cold weather as in the summer and that only radical heroic action could check the spread through the state.

The responsible serum companies, which are in the great majority in the industry, are endeavoring to maintain a price for anti-hog-cholera serum that is just to the producer and the consumer, regardless of the present shortage, and are supplying their old customers as far as their facilities will permit them at a price of about $1.00 per 100 cc.

There are, however, other manufacturers who, in the face of the great demand, have been unable to resist the temptation to boost their prices, in most instances resorting to indirect methods to do it, and as a result some serum is costing the veterinarians who use it in the neighborhood of $3.00 per 100 cc., an unreasonable price in view of the present cost of serum manufacture.

This high and particularly the varying cost of anti-hog-cholera serum has elements of risk to the reputation of the veterinarian using such serum. He will do well in all cases to make it plain that he is not the one who is doing the profiteering. His bill for vaccinating should set out clearly what part of the charge is for serum and what part is for services. Failure to make this distinction in the past was in two states more than anything else responsible for the farm bureaus embarking in the business of handling serum and encouraging their members to do their own vaccinating.

Snakeroot Causes Deaths in Illinois

Dr. F. A. Laird, Chief Veterinarian of the Illinois Department of Animal Husbandry, marshalled the entire force at his command in September in an effort to stamp out the menace of white snakeroot poisoning. The death of fifteen persons was reported throughout the state directly attributed to milk poisoning, and hundreds of head of stock had died as the result of eating the weed. Agents of the state department of agriculture working in all parts of the state where the weed was found made displays in store windows using specimens of the weed so that farmers might be able to identify it.

One of the difficult problems in coping with snakeroot poisoning is in detecting it among milk cows. A cow that is being milked will go on for some time, passing the poison in the milk and showing no effects of having eaten the weed. Cows so affected will eventually absorb enough of the poison to cause death, which occurs several days after the animal shows the first symptoms.

There is no known antidote for the poisoning caused by snakeroot for either

Dr. F. A. Laird

human beings or animals. Dr. Herman Schwarze of East St. Louis, and Dr.

Robert Graham of the University of Illinois, have made exhaustive research to find something to combat the poison, without success.

Doctor Laird instructed his field force to use their efforts in having cattle kept out of shady pastures where the white snakeroot abounds. Each new case was reported, and everything available was done to eradicate the weed.

It was thought that there was no danger in the use of milk from dairies where pasteurization methods are followed. While this process will not destroy the poison, the fact that the dairy receives milk from a great number of cows and mixes it, has the effect of diluting the poison and lessening its virulence to a degree where it is harmless.

State Department Issues Pamphlet

The state department of agriculture issued a pamphlet giving the following information about the poisonous root:

"The white snakeroot is a native plant which grows in timber and woodland pastures and thrives especially where shade is abundant. It is a perennial herb with a snakelike, fibrous root system and a slender, generously branched stem, ranging from 2 to 5 feet in height. Extending from the base of large, opposite, ovate and serrated leaves, three main veins with multiple branches appear prominently on the under surface. Small, white flowers, blooming profusely in compound clusters during the season, mature from August to September and produce seed in great abundance.

Poison Acts Slowly

"Though very little is known of its chemical constituents, the action of white snakeroot poison, according to scientific and medical authorities, is cumulative, causing a restless, weak, exhausted and languid feeling during early stages of the disease. Later, abdominal pains develop, with nausea, vomiting, constipation, thirst, loss of appetite, weak pulse, labored respiration and sub-normal temperature. The throat and intestinal tract apparently become paralyzed and in fatal cases death is often preceded by a prolonged coma.

"If suspicious symptoms develop during the period of incubation, which is said to vary from two to twelve days after drinking or eating beef, milk or dairy products from herds exposed to white snakeroot poison in infested districts, there should be no delay or hesitancy in calling a physician for immediate treatment, as progress of this disease is usually rapid and mortality high in advanced or neglected cases.

What To Do

"When symptoms of the disease develop in domestic animals, call a veterinarian at once and remove herd promptly from infested pastures. Purgatives, internal antiseptics and nerve stimulants are emergency remedies suggested by the profession, though prognosis admittedly is unfavorable and especially so in advanced cases.

"Though the recent survey, for obvious reasons, has not been as thorough or complete as desired, it has, nevertheless, confirmed a general prevalence of the white snakeroot pest throughout the wooded sections of the state and aroused universal activity and public interest in protecting man and beast against this dreaded plague."

Sterility may be due to a vitamin unbalance or a deficiency in diet. At least, five virgin heifers that failed to conceive after having been served repeatedly by different sires, were successfully bred after feeding for thirty days on sprouted oats.

The Kansas Agricultural Experiment Station reports in technical bulletin No. 14 on 119 bacteriological examinations where the history or symptoms indicated infectious abortion. Only 35 per cent of the cases yielded the Bang bacillus and in 16 per cent of these cases it was found with other disease producing organisms. Forty-nine per cent of the cases yielded organisms other than the Bang.

A FEW UNUSUAL CASES

It makes no difference how long one practices, he occasionally runs across cases that are of rare occurrence, and I will give a brief description of a few that came under my observation lately.

Case No. 1: A five-months-old male fox terrier puppy was presented at my hospital for treatment with the history that he had not eaten anything for three days. He showed occasional griping pains and was as yellow as a pumpkin all over, about the yellowest dog I ever saw. My diagnosis was icterus caused by ptomain poisoning, as the owner said the animal had eaten some spoiled meat before he was taken sick. He was given the usual treatment for this trouble. However, he never recovered his appetite and died on the third day in a comatose condition. On account of being rushed with calls on the day the patient died, no autopsy was held. However, I am inclined to think that in this case no line of treatment would have been of any avail.

Case No. 2: A six-months-old male pointer puppy was brought to the hospital with tetanus and could get his jaws only about one-half inch open, with eyes drawn back, and presenting about all the symptoms that the horse does in tetanus. I diagnosed the case as tetanus, although Glass in his new book describes these cases as ptomain poisoning. The owner said he bought his dog food from a restaurant and that the last lot was pretty badly spoiled. I had seen tetanus in horses, hogs, goats and other animals a great many times, but this was my first case in a dog. However, I proceeded to treat him on the same lines I had been treating other animals. His jaws were so closely set that I could not get a physic tablet or pill into him. I gave one-tenth grain lobelin sulphate which produced emesis in a few minutes. After this was over, I gave five-drop doses of fluid extract of hypericum every three hours for the first day, then three times a day for three days, which seemed to control the spasms and relax the patient considerably. He was fed a liquid diet, mostly broth from a canned meat that I get from a company that puts up dog foods. This he could eat if it was held up on a level with his head but could not eat off the floor of the cage. He would have starved to death if I had not held his food and water up on a level with his body. About the fifth day he could get a little of his food from the floor, and on the twelfth day he was taken out of the hospital, not well, but so improved that he needed no further treatment. The owner informed me a few days ago that the dog had entirely recovered.

Case No. 3: I received a hurry call to a dairy of thirty head of registered cattle, the owner stating they had been dipped in an arsenical dip four days previously and the dip was too strong with arsenic and had ruined two of the cows' udders. I soon arrived at the place and was surprised to find the condition was not caused from the dip but from a strong acid which someone had applied the night before. It was about the worst sight I ever saw. However, it was confined to the teats, from which the skin had all peeled off and was hanging down. The cows kicked so that it was impossible to milk them by hand. I drew the milk with a milking tube and applied a ten per cent. thuja ointment to the teats and left some of the ointment with directions to apply three times a day. I called the next day and used the milking tube, and then left a milking tube and some thuja ointment with the owner, giving instructions to discontinue using the tube as soon as the cows would stand milking by hand, which was four days. In two weeks they were back to their normal milk flow. The teats were healed up and looked good. This is the first case of this kind I ever had.

Case No. 4: A lady brought a black male cat to my hospital, the animal having an opening in the middle of the under surface of the trachea filled with a yellow pus, which the owner thought was caused by a fishbone working through, as the cat had been fed some fishbones the day before. I proceeded to see what I could

do, and on close examination I saw it was no fishbone, but yet I did not know what it was. I took some small forceps and pulled it out and found it to be a hookworm. This put me to thinking that I had better treat the cat for hookworms, which I did. At four o'clock in the afternoon, I gave twenty minims of oil of rue in a capsule, and at five o'clock, or an hour later, I gave two of my pink worm tablets, now listed as pulvoids No. 447, Balmony Comp. I wanted to give enough to act as a purgative. The second day I gave three of the pink tablets, one tablet morning, noon and night, making twenty minims of oil of rue and five of the worm tablets in twenty-four hours. The cat passed eight hookworms the second day, five the third and one the fourth day, with a goodly number of roundworms. The wound in the wind-pipe was dressed once a day with iodized echafolta during the time the cat remained in the hospital, which was seven days. At the end of this time the wound was healed, but whether I got all the hookworms out I don't know and probably never will unless the cat dies from some other cause and an autopsy is held. But as the cat is in good condition and enjoying good health, I am not going to worry if there are a few hookworms left in its alimentary canal, for what the eye can't see the heart should not grieve over.

Mobile, Ala. G. W. Browning, V.S.

Infectious abortion in sheep due to a vibrio has been observed in Montana by Welch and Marsh. The lamb losses in some flocks exceeded fifty per cent. The vibrio occurs in stagnant water, and this may be the source of infection of the ewes.

Salt is an essential ingredient of the ration for sheep and particularly feeding lambs. Contrary to the usual belief salting will not cause scouring either in mature sheep or lambs. However, lambs infested with stomach worms or other digestive disorders associated with diarrhea may have an abnormal desire for salt.

DOCTOR BUX GIVES ADVICE ON HORSESHOEING

Dr. J. H. Bux, State Veterinarian of Arkansas, is quoted in the Joplin (Mo.) Globe of September 12th as giving the following advice regarding the shoeing of horses: "As one visits various sections of the state, it is very evident that the subject of horseshoeing does not receive the attention to which its importance entitles it by horse owners and farriers. Many otherwise sound horses are being ruined by improper shoeing. A vast majority of the horses and mules do not approach the normal in conformation. The usefulness of many work animals of faulty conformation can be greatly extended by proper shoeing. The up-to-date farrier should be prepared to render this service. Veterinarians, graduates of reputable veterinary colleges, are fully competent to give advice along this line. Many abnormal conditions of the feet and legs of horses and mules following diseases such as rheumatism and injuries are benefited by the application of special shoes. This is known as pathological shoeing and should be done under the direction of a qualified veterinarian."

STABLE FLIES STOP FARM WORK

Northern Texas and southern Oklahoma were afflicted during the summer with an outbreak of the stable fly, reported to be the most severe since the unprecedented condition which occurred in 1912. During the height of the outbreak, according to the United States Department of Agriculture, dairymen reported a reduction of from 5 to 60 per cent in milk flow. Threshing gangs were obliged to discontinue operations because of their inability to keep teams in the fields. Cattle on feed began to lose weight and were rushed to market, and all livestock in the heavily infested area fell off in condition. Reports of death due to flies were not uncommon, and included sheep, cattle, and horses.

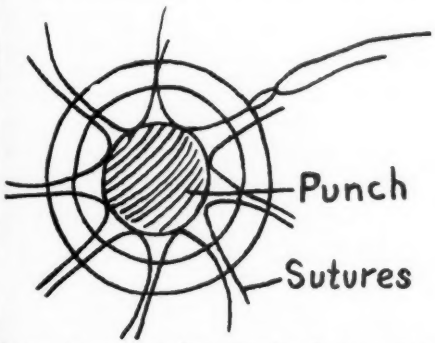
The condition which gave rise to this outbreak was a large grain crop, with much straw, and the occurrence of an abnormal

amount of rain during threshing. This not only produced favorable breeding places in straw stacks, but resulted in the fermentation of grain in the shock and the breeding of flies therein. The flies were still sufficiently abundant early in September to cause severe annoyance.

OPERATION FOR PROLAPSE OF THE RECTUM IN PIGS

As we have had quite a number of cases of prolapse of the rectum in pigs, and as one of these died after a text-book treatment, we ventured to try a new technic. While it is extremely simple, it has proved of real value in our hands.

The affected pig is placed in a dorsal position preferably on a box or a table with an assistant holding it.



Schematic cross-section showing how sutures are placed.

The prolapsed portion is washed with a mild antiseptic. When the part has been thoroughly cleansed, a dental punch is inserted into the lumen of the prolapsed portion, well past the anus. Of course, any round solid object of the proper diameter will serve the same purpose as the dental punch. An assistant holds the dental punch in position and we are ready for the surgery.

A curved needle threaded with catgut is passed through both layers of the bowel, close to the anus, till it butts against the punch; then it is passed laterally and out again, about one-half inch from the point of entrance. The two ends are tied and cut. Another suture is started at the point of emergence of the previous one. This is kept up until there is a continuous row of interrupted sutures around the bowel.

When this is completed, the prolapsed portion is clipped off about one-quarter inch posterior to the line of sutures. The owner is instructed to feed the pig a laxative diet for a week.

While we have never had occasion to try this technic in prolapse of the rectum in a horse or cow, we can see no reason why it should not be just as successful on these animals as on the pig.

H. T. Melgaard, D.V.M.

Elk River, Minn.

HEMATOMA IN A DOG

A few months ago, a very fat bull terrier male dog was presented at the hospital clinic for treatment. The anamnesis given by the owner ran as follows: Three days before, the animal was bumped by a motor vehicle as he was playing around and as a consequence an enlargement developed shortly after the accident took place. No previous treatment given.

Upon clinical examination the following symptoms were observed: The swelling was circumscribed but almost oval in outline. No redness of the skin was noticed. It was cold, soft, elastic, and undulated on pressure. Approximately it extended from the base of the tail to the last thoracic vertebra, and from the external angle of the ilium to the other. However, it was more on the right than on the left. The dog evinced no pain during the entire manipulation. The animal appeared at a distance just as if an ordinary ice-bag was attached over his lumbar region. Which blood vessel ruptured I could not determine.

The case was diagnosed as hematoma.

The animal was operated on. The lowest point was determined. The field of operation was shaved and rendered aseptic. A small incision was made through the skin, large enough to admit the jaws of the hemostat. Then the instrument was inserted in the wound, forcing it through the tissues below into the cavity until about two-thirds of the jaws were in. The forceps was opened gradually and sero-sanguinous

fluid spurted out in large quantity. The liquid was about a liter. During the procedure constant pressure was applied against the hematoma to remove completely the fluid. Then the forceps was closed and withdrawn. The wound was painted with tincture of iodin.

After the operation the animal was taken home as the owner did not care to leave him. Some astrigent solution was given to be applied daily on the affected area. In a week the animal was reported perfectly cured.

L. M. Yutuc.

Manila, P. I.

TREATMENT FOR PROLAPSE OF UTERUS AND RECTUM

Referring to the report of Dr. G. E. Ellis of Waynesboro, Miss., in the May issue of Veterinary Medicine, I wish to say that I have had quite a wide experience with the so-called prolapse of the uterus and prolapse of the rectum. I have found that if the parts are bathed with a very strong astringent for about thirty minutes, the protruding portion then replaced and the patient given two to three ounces of chloral hydrate by the mouth so as to keep the animal quiet for at least twelve to fourteen hours to give the parts time to settle back in place without being subject to straining, the results will be far better and there will be less worry. At least, that has been my experience in these cases.

I never have had to make a second trip. But I always see that the animal receives enough chloral hydrate to keep it asleep for at least twelve to fourteen hours. As an astringent I use four parts of pulverized alum and three parts boracic acid dissolved in a gallon of water a little above body temperature and bathe the parts with this solution. Use at least three-fourths pound of alum and one-half pound of boracic acid, having it thoroughly dissolved in the water before applying to the parts.

Harper, Kans. F. Johnston, D.V.S.

TREATING POULTRY FOR TAPEWORMS

Although many remedies have been recommended and tried to remove tapeworms from poultry, none of them has been found satisfactory. For this reason investigations were started at the Wisconsin Agricultural Experiment Station in an attempt to find some drug that would remove tapeworms and still not harm the bird. After carefully controlled tests on a large number of birds had been made a drug, known as kamala, was discovered. Besides being nearly 100 per cent effective, kamala has a wide range of safety and can be given to the entire flock mixed with the feed, or administered individually, if desirable. When given in the doses prescribed it has been found palatable and does not decrease egg production, or cause any bad effects.

Kamala is a brownish-red, non-odorous and nearly tasteless powder obtained from the red glands secured from the capsules of a large evergreen shrub, which grows in tropical Asia, parts of Africa, the East Indies and in Australia. It may be purchased from any druggist. As kamala is often adulterated, only the best quality should be bought.

The first thing to do when the entire flock is to be treated at one time is to group the birds according to weight; then fast them for 18 to 24 hours; next compute the amount of kamala that will be required to treat the flock according to the following dose table:

Birds weighing ½ to 1 lb.....¾ gram
Birds weighing 1 to 3 lbs..... 1 gram
Birds weighing 3 lbs. and over.. 2 grams

The kamala should be thoroughly mixed with one third as much corn meal, or dry bread crumbs, as the flock will readily consume at one time. It is not necessary to follow the kamala with a purgative as it acts in that capacity.

If post mortem examination has revealed an extremely heavy infestation with tapeworms, it is likely that one treatment will not be sufficient to remove all the parasites. In this event the treatment should be repeated.

It is always advisable with a small flock to treat each bird separately. This insures each bird receiving the desired dose. Individual doses of kamala for birds of different weights should be based on the following dose table:

Birds weighing ½ to 1 lb. .... ½ gram
Birds weighing 1 to 2 lbs.... 1 gram
Birds weighing 2 lbs. and over. 1½ grams

For convenience in administering kamala to individual birds the drug may be placed in one-half gram gelatin capsules, which are easily given by moistening with water and placing them on the back of the tongue.

As the kamala treatment for tapeworms in poultry is new, there has been little opportunity to secure reports on its use in any large number of birds. Consequently, the Wisconsin station would appreciate receiving a report from those who give this remedy a trial.

VACCINATION OF ANIMALS AGAINST RABIES

The prophylactic vaccination of dogs against rabies is a practical procedure, and can be usually accomplished by the six-dose or the single dose treatment. These products can be obtained from the various commercial biologic houses.

In experimental work conducted by the Bureau of Animal Industry on the single injection method of vaccination, a street virus was encountered against which little protection was afforded vaccinated dogs. Against other street viruses, distinct protection was obtained by this method. The efficiency of the six-dose treatment against this atypical virus is being investigated.

Unless dogs are running at large in a district where rabies is prevalent; in other words, unless there is a possibility of exposure to rabies infection, no need is seen for vaccination.—*Jour. A. M. A.*

International Newsreel

A prize racer feeding her litter of nine puppies, estimated to be worth $1,000 each. The youngsters were sired by Champion Blue Hill, owned by Dr. H. Brownlee of Sabetha, Kansas.

SERUM RELEASED WITHOUT TEST

Recent serious outbreaks of hog cholera have exhausted available supplies of the preventive serum. As an emergency measure the United States Department of Agriculture has notified its inspectors, who supervise the manufacture of serum, to release the product without the customary tests. The effect of this notice is to make available for immediate use approximately 35 million cubic centimeters of hog-cholera serum. Serum so released will bear the statement: "This serum has not been tested."

The department's instructions to its inspectors stationed at serum establishments will take effect immediately and continue so long as an emergency is considered to exist. The customary supervision with respect to sanitation and methods used in serum manufacture will be continued as in the past under the provisions of the virus-serum-toxin law which placed the manufacture of serum and other veterinary biological products intended for interstate commerce under the supervision of the United States Department of Agriculture.

According to estimates of officials of the Bureau of Animal Industry, under whose direction serum is inspected, the supply of serum to be made available at once will treat approximately 700,000 hogs. By omitting the customary tests the serum will be released about three weeks earlier than would prevail under normal conditions, and about 11 days earlier than under the special authority recently granted to help stem the tide of the present serious outbreaks.

Practically all hog-cholera serum made in the United States is manufactured under Federal supervision, there being about 60 establishments making the product. The Bureau of Animal Industry is represented in swine-raising States by approximately 33 inspectors specially trained in hog-cholera control. In addition, by waiving the customary tests of serum, by its former warnings as to danger of serious outbreaks owing to the large numbers of susceptible swine in the country, and the distribution of educational literature, department officials have used all available resources to improve the situation. The ultimate checking of cholera outbreaks, however, depends essentially on the manufacture and use of a sufficient quantity of serum to immunize the swine in the regions affected.

PUBLIC WELCOME AT ASSOCIATION MEETINGS

Incidentally, it ought to be understood that farmers and stockmen are always welcome to attend the Veterinary Association's meetings. For a number of years our Missouri Association has sent out invitations to representatives of all livestock and breeders' associations to attend the veterinary meetings. All the papers and discussions are wide open to all. While they are somewhat technical, any stockman will be well repaid for his time spent in attending any of these veterinary meetings.

This matter is mentioned for the purpose of trying to get stock owners, and the public in general, better acquainted with the veterinary profession. The profession has nothing to fear from a close acquaintance.—D. F. Luckey in The Missouri Farmer.

Salmon poisoning in dogs in the Columbia River district has been found to be distomiasis caused by the ingestion of trematode-infested salmon. These same parasites have been found in coyotes and bobcats, and it is possible that these and other wild animals are the natural source of the trematodes.

Effective purification of water by noninjurious chemicals is an accomplished fact. Thus, a dangerous water may be rendered harmless by the use of two-tenths part available chlorin to a million parts of water, and an objectionable appearing water due to algae and other low forms of plant life can be rendered free of such defects by the use of one part of copper sulphate to the million.